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April 29, 2013

Mr. Corey Webb  
Section Chief  
Voluntary Remediation Program  
Office of Land Quality  
100 North Senate Avenue  
Indianapolis, Indiana 46204

Re: ***Response to IDEM's Review of Second Revised Work Plan  
For the Third Round of CAP 18<sup>®</sup>ME<sup>™</sup> Injections***  
Michigan Plaza  
3801-3823 West Michigan Street  
Indianapolis, Indiana 46222  
IDEM Incident # 0000198  
IDEM VRP # 6061202  
MUNDELL Project No. M01046

Dear Mr. Webb:

Based on our receipt of the Indiana Department of Environmental Management's March 22, 2013 Review of the Second Revised Work Plan for the Third Round of CAP 18<sup>®</sup>ME<sup>™</sup> Injections, Mundell & Associates, Inc. (MUNDELL), on behalf of AMMH, is pleased to submit this response as requested. The following paragraphs respond directly to those comments and requests made by IDEM in the above-referenced review letter.

#### **GENERAL COMMENTS**

##### ***IDEM Comment No. 1:***

*"A baseline groundwater sampling event must be conducted with results communicated to IDEM prior to beginning injections. The baseline sampling should also include hydrologic testing to confirm the influence of the remedial injections on the formation. The sampling may coincide with one of the regularly scheduled quarterly monitoring events."*

##### **MUNDELL Response No. 1:**

MUNDELL has completed the baseline groundwater sampling event as part of the 1<sup>st</sup> Quarter of 2013 monitoring event on February 28 to March 9, 2013. In addition, during March and April 2013, MUNDELL completed hydrologic (falling and rising head slug) testing on seven (7) monitoring wells between the proposed CAP 18<sup>®</sup> injection locations and the Vermont Street Residents area: MMW-P-02, MMW-P-11S, MMW-P-11DR, MMW-P-13S, MMW-P-13D,

MMW-P-14S and MMW-P-14D. The results of the 1<sup>st</sup> Quarter 2013 monitoring and hydrologic testing are provided as **Attachments 1** and **2**, respectively.

The slug testing results, summarized in **Table 1** with the analysis provided in **Attachment 2**, indicate that the hydraulic conductivity of the upper sand and gravel unit ranged from about 22.1 to 141.1 ft/day, with a representative, mean value of about 70 ft/day. It should be noted that groundwater levels that were displaced temporarily within each monitoring well during the falling and rising head tests were observed to rapidly return to their pre-displacement levels within a few minutes, indicating the responsiveness of the sand and gravel units.

Based upon the measured mean hydraulic conductivity value of 70 ft/day, MUNDELL evaluated the expected behavior of groundwater during a typical 10 hour CAP 18® injection in which the maximum discharge (injection) rate would be limited to about 3 gpm. Note that the actual injection rates for the 2007 and 2009 injection events ranged between 0.38 and 0.70 gpm (See Table 2C). As set forth in **Attachment 2**, our analysis used the pump/injection test software AQTESOLV™ to simulate a constant pumping rate of 3 gpm into a 20 ft thick saturated aquifer with a K value of 70 ft/day, and a storativity (specific yield, S) range of 0.1 to 0.3, and determined that the theoretical maximum response (in this context, water level rise) in the groundwater level at a distance of 1 ft from the injection point is estimated to range between 0.27 and 0.31 ft, with the rise in groundwater level at a distance of 10 ft away from the injection point to be between 0.12 and 0.16 ft. Mounding effects would be negligible (~0.02 ft or less) at a 50-foot distance from the injection point. Therefore, mounding effects even within close proximity to the injection point are expected to be minimal. In addition, once injection stops, the AQTESOLV™ analysis predicts that it will take two hours or less for the groundwater levels to return to approximate pre-injection conditions. This theoretical analysis fully supports the conclusion that no significant mounding of groundwater will occur during the CAP 18® injections.

#### **IDEML Comment No. 2:**

*“During the injections, the groundwater elevations in nearby wells should be closely monitored to evaluate hydraulic control during remedial implementation. The groundwater elevation monitoring should continue after the injections to assess the physical behavior of the substrate in the formation. The frequency of monitoring both during and after the injections should be based on the results of the hydrologic testing and should be submitted to IDEM for review prior to beginning injections. Once the frequency has been agreed upon the results of groundwater elevations monitoring should be submitted with the quarterly monitoring reports.”*

#### **MUNDELL Response No. 2:**

To determine the frequency of water level and CAP 18® measurements that should be taken and the number and location of wells that should be actively monitored in connection with the proposed 3<sup>rd</sup> round of injections, MUNDELL reviewed actual monitoring data that were gathered during the injections that took place in August/September of 2007 and February 2009. Had any significant or sustained mounding occurred as a result of the prior CAP 18® injections, water levels in the vicinity of and away from the injections would have been observed to rise several feet above their typical levels and remain there, resulting in a potentiometric surface with contours lines wrapping around the point or area of injection (as if an elevated water level ‘hill’ is

present). This would have resulted in potentiometric contour lines indicating significant radial flow outward from the injection points in all directions.

As a reminder, injection of CAP 18® has been a relatively straight forward process as shown in **MUNDELL Figure 1**. During the previous injection events, a Geoprobe was driven into the A2 aquifer until the upper till surface was encountered. The leading section of the drill rods was a three (3)-foot “screen.” A measured quantity of CAP 18® was injected and the drill rods and screen were pulled back (withdrawn) three (3) feet and the injection process was repeated. A typical injection log is presented as **MUNDELL Figure 2** and shows the amount injected at each interval. **MUNDELL Figures 3A thru 3F** are photos of a typical CAP 18® injection and equipment. **MUNDELL Figures 4 and 5** show the injection sites for the August 2007 and February 2009 events, respectively. **Table 2A** presents the specific injection volumes per depth interval for Source Areas A, B and C for the August 1 – September 4, 2007 event (see **MUNDELL Figure 4**). **Table 2B** presents the injection volumes per depth interval for the February 4 – 12, 2009 event (see **MUNDELL Figure 5**). **Table 2C** is a summary of the CAP 18® injection volumes for both events. Again, note that the average injection rate ranged from 0.38 to 0.70 gallons per minute.

During the course of the August 2007 injection, groundwater levels and CAP 18® product levels were monitored. These measurements are presented in **Table 3 – Groundwater Level and CAP 18® Product Level Monitoring – Post Injection**. A water level meter and an oil/water interface probe were used to measure water level changes and observe the presence of any oil on the groundwater surface in the vicinity of the injection locations as the injections were occurring. No measureable groundwater mounding effects or the presence of CAP 18® I (*i.e.*, no rise in groundwater level of more than 0.01 ft or the presence of a measurable CAP 18® thickness of greater than 0.02 ft) beyond a 10 ft radius from the point of injection was observed in nearby monitoring wells associated with **Source Area A** (MMW-P-02, MMW-P-03S/D, MMW-P-04, MMW-P-05, MMW-P-06), **Source Area B** (MMW-P-01, MMW-P07, MMW-P-08, MMW-P-10S/D, MMW-8S) and **Source Area C** (MMW-1S, MMW-8S, MMW-9S, MMW-10S). As observed in the data, the injections caused no widespread or thick layer of CAP 18® to accumulate (as a LNAPL), and there was no change in the potentiometric surface or groundwater flow direction.

As part of its normal quarterly monitoring of the site, MUNDELL measured water levels in on-site monitor wells and prepared a series of potentiometric surface maps for dates prior to and subsequent to both the August 2007 and February 2009 CAP 18® injections. **Figures 6 through 10** cover the period from June 14, 2007 (prior to the August 2007 injection) to June 2, 2008 (ten months after the injection). A review of those figures shows that the direction of groundwater flow through Source Areas A, B and C was generally to the south throughout the ten (10) months subsequent to the injection, with no groundwater mounding. **Figures 11 through 17** cover the period from March 17, 2009 (one-month after the February 2009 injection) to July 20, 2010 (seventeen months after the injection). A review of those figures shows that the direction of groundwater flow through Source Areas A, B and C was generally to the south throughout the seventeen (17) months subsequent to the injection, with no groundwater mounding.

Based on the relative magnitudes of water levels observed during the CAP 18® injections (i.e., the water level did not raise significantly near injection locations as compared to other water levels taken during the injections in wells further away), and the lack of CAP 18® accumulation in wells beyond a distance of 10 ft from the injection points (e.g., note that CAP 18® was detected in MMW-P-04 with a thickness of 3.77" on June 15 (see **Figure 12**) and August 5, 2009 (see **Figure 13**), but not in any other wells), there is no evidence in the field data collected that significant groundwater mounding or CAP 18® transport away from the injection locations occurred as a result of the in-situ bioremediation process.

Based on all previous water level and CAP 18® thickness measurements collected during the 1<sup>st</sup> and 2<sup>nd</sup> CAP 18® injections, the recent March-April 2013 hydrologic testing results, and the additional analysis of the expected aquifer response during the CAP 18® injections, and the fact that the proposed injection volume for the 3<sup>rd</sup> event is less than the injection volume during the first two events, no significant groundwater mounding or CAP 18® movement is expected to occur as a result of the proposed 3<sup>rd</sup> injection event. In addition, no significant water level rise is expected to occur beyond a distance of about 50 ft away from each active injection location. Finally, once injections are stopped at a particular injection location, any water level rises that occur are expected to return to pre-injection levels within about 2 hours of cessation.

To confirm these predicted outcomes, , as requested by IDEM, MUNDELL will conduct water level and CAP 18® measurements at selected locations in connection with the 3<sup>rd</sup> CAP 18® injection event. The following wells will be monitored before, during and after the injection:

**All Source Areas** – MMW-P-02, MMW-P-11S/D, MMW-P-13S/D, MMW-P-14S/D, and MW170S/D (only if accessible by ENVIRON).

**Source Areas B and C** – MMW-12S/D, MMW-P-01, MMW-P-07

**Source Area C** – MMW-1S, MMW-9S, MMW-10S

Groundwater level measurements will be made with transducers in the monitoring wells listed above at a frequency of one reading per minute. Water level measurements will also be taken in monitor wells at greater distances with water level indicators at a rate of at least once per hour. Water level measurements will continue to be taken after the injections are completed until it has been determined that either 'no rise' in groundwater level has been observed, or the water level returns to pre-injection conditions. As discussed above, it is expected that readings beyond a few hours after injections should clearly demonstrate that no sustained mounding has occurred. At that time, all monitor wells utilized for water level measurements will be probed with an oil/water interface indicator to determine the presence/absence of any CAP 18®. To provide additional longer-term water level data following the injection event, transducers will be left in MMW-P-11S/D, MMW-P-13S/D, and MMW-P-14S/D to observe long-term water level fluctuations during the quarter following injections. Periodic measurements will be made in these wells with an oil/water interface probe to monitor for the presence/absence of CAP 18®.

**IDEML Comment No. 3:**

"CAP18 ME creates an anaerobic environment that allows fermentation to occur. Since vapor intrusion is known to occur in the area, IDEM requests that methane be monitored in wells

*MMW-P-11, MMNW-P-12, MMW-11S, and MMW-12S during the first quarter after injections to evaluate this concern. After submittal to IDEM, the data will be evaluated to determine if methane monitoring should continue."*

**MUNDELL Response No. 3:**

MUNDELL will complete this task as requested by IDEM. It should be noted that MUNDELL has performed methane testing previously on site on May 10, 2011 and April 24, 2012 in existing permanent gas monitoring wells MGW-01, MGW-02 and MGW-05 to address IDEM concerns regarding potential methane generation during active bioremediation using CAP 18®. As shown in **Figure 18**, all results were less than the method detection limit of 10 parts per million. The location of MGW-05 is directly downgradient of the injections that occurred in Source Area B, the most severely impacted of the three Source Areas.

As methane has not been detected after testing downgradient of Source Area B after the 2007 and 2009 injection events, it is not likely that the 3<sup>rd</sup> injection event will generate methane concentrations of concern since chlorinated solvent groundwater levels have been dramatically reduced from their pre-injection condition in August 2007. MUNDELL recommends that the methane sampling and testing undertaken be delayed for at least 1 to 2 months after injection so that the sampling and testing will coincide with the most likely time period in which methane production resulting from an increased microbial population is at a maximum.

**IDEML Comment No. 4:**

*"Vinyl chloride (VC) is commonly produced by CAP18 as part of the bioremediation process. Considering that several of the drinking water wells in the Vermont/Cossell neighborhood are contaminated with VC, particular attention should be given to the post injection contaminant trends in MMW-P-12, MMW-P-13, MMW-P-14, and MW-170 well nests. If post injection monitoring shows that the VC in these wells continues to increase appreciably above the baseline sampling results for more than two consecutive quarters, then a contingency plan should be implemented to prevent further degradation of the drinking water supply."*

**MUNDELL Response No. 4:**

MUNDELL will provide a contingency plan in the Remediation Work Plan to account for unexpected events such as the potential increase in VC in MMW-P-11S/D, MMW-P-12, MMW-P-13, MMW-P-14 and MW-170 well nests. It is expected that this plan will include, at a minimum, immediately meeting with IDEM to discuss the observed trends and consideration of additional investigation to identify the cause of the observed trends and increased frequency of sampling and testing of the monitoring wells affected. If an increase in VC in the listed wells is determined to be attributable to the CAP 18® injection, then additional steps may be warranted.

**IDEML Comment No. 5:**

*"The report states that post injection monitoring will continue on a quarterly basis with results "submitted to IDEM at the end of the month following each sampling quarter." This is unnecessarily complex. To date, the analytical results have not been submitted to IDEM on a regular basis. It is important that the sampling results are submitted promptly so potential*

*concerns can be addressed in a timely manner. Therefore, IDEM requests that the quarterly monitoring results be submitted approximately 60 days after sampling occurs unless a written extension request is submitted and approved."*

**MUNDELL Response No. 5:**

MUNDELL will comply with this request.

**IDE� Comment No. 6:**

*"The final remedial objectives for this remedy were not included in the report, but will be submitted as part of the forthcoming Remediation Work Plan (RWP). IDEM requests that the RWP be submitted within 180 days from the date of this letter. The RWP will need to propose clear, long-term remedial objectives for the project. Also, a contingency plan for potential movement of VC towards the impacted residential neighborhood should be included. As long as drinking water and vapor intrusion receptors remain and it is unlikely that the site will be able to obtain a Covenant Not To Sue without using additional remedial measures to supplement the CAP18 ME injections."*

**MUNDELL Response No. 6:**

MUNDELL will submit the revised RWP within 180 days from the date of IDEM's letter as requested (e.g., by September 22, 2013), and will include both long-term remedial objectives as well as a contingency plan in the event of unexpected impacts towards the Vermont Street residential neighborhood. Following the 3<sup>rd</sup> round of CAP 18® injections, we will continue to evaluate progress toward the remediation goals set forth in the RWP and determine what additional steps are necessary to achieve satisfactory closure of the Site.

**CLOSING**

We appreciate the opportunity to provide this information to IDEM and look forward to IDEM's approval of the Work Plan for the 3<sup>rd</sup> CAP 18 TM® injections. If you should have any questions, please do not hesitate to contact us at (317) 630-9060 or via email ([jmundell@MundellAssociates.com](mailto:jmundell@MundellAssociates.com); [mbreting@MundellAssociates.com](mailto:mbreting@MundellAssociates.com)).

Sincerely,

**MUNDELL & ASSOCIATES, INC.**

*Mark E. Breting*

Mark E. Breting, L.P.G.  
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John A. Mundell, P.E., L.P.G.  
President/Senior Environmental Consultant

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Attachments:

Tables

Figures

Attachment 1 – 1<sup>st</sup> Quarter 2013 Groundwater Monitoring Results

Attachment 2 – March-April 2013 Hydrologic Testing Results

cc:     Mr. Peter Cappel, AMMH  
          Mr. Scott Reisch, Hogan Lovells US LLP  
          Mr. Bob, Minning, R.C. Minning & Associates, Inc.

## **TABLES**

**Table 1**  
 Slug Test Data Summary - March-April 2013  
 Michigan Plaza  
 3801-3823 West Michigan Street  
 Indianapolis, Indiana  
 MUNDELL Project No.: M01046

Field Test Type/ Well I.D.	HYDRAULIC CONDUCTIVITY, ft/day										
	MMW-P- <b>02</b>	MMW-P- <b>11S</b>	MMW-P- <b>11DR</b>	MMW-P- <b>13S</b>	MMW-P- <b>13D</b>	MMW-P- <b>14S</b>	MMW-P- <b>14D</b>	Maximum	Median	Mean	Minimum
Falling Head	33.5	32.9	85.0	57.4	52.0	93.0	67.1	93.0	57.4	60.1	32.9
Rising Head	44.4	38.9	130.3	99.6	22.1	141.1	84.4	141.1	84.4	80.1	22.1
<b>Avg K-Value</b>	<b>39.0</b>	<b>35.9</b>	<b>107.6</b>	<b>78.5</b>	<b>37.0</b>	<b>117.0</b>	<b>75.8</b>	<b>117.0</b>	<b>70.9</b>	<b>70.1</b>	<b>27.5</b>

Note:

All analyses above utilized the Bower and Rice solution method for unconfined aquifers (Bouwer and Rice, 1976) as contained in the software AQTESOLV™.

Table 2A CAP18 Injection Data August 1 - September 4, 2007 Michigan Plaza 3801-3823 West Michigan Street Indianapolis, IN Mundell Project # M01046					
Injection Point	Date of Injection	Depth of Boring (ft)	Depth of Clay till (ft)	Injection Depth Range (ft)	Total Amt CAP18 Injected (gallons)
<b>Source Area A:</b>					
A1	8/16/07	39	39	17-38	22.0
A2	8/16/07	37	37	15-36	22.0
A3	8/16/07	39	NA	17-38	22.0
A4	8/17/07	42	42	17-41	22.0
A5	8/17/07	43	43	15-42	22.0
A6	8/17/07	42	42	17-41	22.0
A7	8/17/07	44	44	16-43	22.0
A8	8/17/07	44	44	16-43	22.0
A9	8/17/07	40	40	15-39	22.0
A10	8/17/07	39	NA	17-38	22.0
A11	8/17/07	43	43	15-42	22.0
A12	8/20/07	52	52	15-51	22.5
A13	8/20/07	34	34	15-33	22.0
A14	8/20/07	36	36	17-35	22.0
A15	8/20/07	36	36	17-35	22.0
A16	8/20/07	36	36	17-35	22.0
A17	8/21/07	39	39	17-38	66.0
A18	8/21/07	36	36	17-35	66.0
A19	8/21/07	36	36	17-35	66.5
A20	8/21/07	39	39	17-38	66.0
A21	8/21/07	36	36	17-35	66.5
A22	8/22/07	38	38	16-37	66.0
A23	8/22/07	39	39	17-38	66.0
A24	8/22/07	37	37	15-36	66.0
A25	8/22/07	36	36	17-35	66.5
A26	8/22/07	36	36	17-35	66.5
A27	8/23/07	36	36	17-35	66.5
A28	8/23/07	35	35	16-34	66.0
A29	8/23/07	36	36	17-35	66.5
A30	8/23/07	35	35	16-34	66.0
A31	8/23/07	35	35	16-34	66.0
A32	8/24/07	32	30	16-31	66.0
A33	8/24/07	34	34	15-33	66.0
A34	8/24/07	32	32	15-31	22.0
A35	8/24/07	34	34	15-33	22.0
A36	8/24/07	34	34	15-33	66.0
A37	8/24/07	32	32	16-31	66.0
A38	8/24/07	32	32	15-31	22.0
A39	9/4/07	36	NA	17-35	55.0
A40	9/4/07	36	NA	17-35	55.0
A41	9/4/07	36	NA	17-35	55.0

**Table 2A**  
**CAP18 Injection Data**  
**August 1 - September 4, 2007**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, IN**  
**Mundell Project # M01046**

Injection Point	Date of Injection	Depth of Boring (ft)	Depth of Clay till (ft)	Injection Depth Range (ft)	Total Amt CAP18 Injected (gallons)
<b>Source Area B:</b>					
B1	8/1/07	46	38	15-45.5	44.6
B2	8/1/07	42	NA	14.5-41.5	47.2
B3	8/2/07	45	39	14-44	44.2
B4	8/2/07	42	40	14-41	44.4
B5	8/2/07	40	39	15-39	44.0
B6	8/2/07	42	40	17-41	45.0
B7	8/3/07	38	38	16-37	66.5
B8	8/3/07	38	38	16-37	66.5
B9	8/3/07	32	31	17-31	22.0
B10	8/3/07	28	24	15-27	65.0
B11	8/6/07	30	30	17-29	22.0
B12	8/6/07	32	31	16-31	67.0
B13	8/6/07	32	31	16-31	22.0
B14	8/6/07	32	31	16-31	67.0
B15	8/6/07	21	21	16-20	22.0
B16	8/6/07	27	27	17-26	64.0
B17	8/7/07	31	31	15-30	22.0
B18	8/7/07	27	27	17-26	66.0
B19	8/7/07	35	33	15-33	22.0
B20	8/7/07	39	38	17-38	65.5
B21	8/8/07	38	38	16-37	66.3
B22	8/8/07	38	38	16-37	66.3
B23	8/8/07	37	37	15-36	66.3
B24	8/8/07	34	34	15-33	66.0
B25	8/8/07	38	38	15-36	88.5
B26	8/9/07	35	35	16-34	66.0
B27	8/9/07	31	31	15-30	66.0
B28	8/9/07	36	35	17-35	89.0
B29	8/9/07	36	35	16-34	66.0
B30	8/9/07	35	35	16-34	66.0
B31	8/10/07	35	35	16-34	22.5
B32	8/10/07	36	36	17-35	66.0
B33	8/10/07	34	34	15-33	66.0
B34	8/10/07	35	35	16-34	22.0
B35	8/10/07	36	34	17-35	66.0
B36	8/13/07	37	37	15-36	22.0
B37	8/13/07	37	37	15-36	22.0
B38	8/13/07	36	36	17-35	22.0
B39	8/13/07	39	39	17-38	22.0
B40	8/13/07	39	39	17-38	22.0
B41	8/13/07	38	38	16-37	22.0
B42	8/13/07	38	38	16-37	22.0
B43	8/13/07	39	39	17-38	22.0
B44	8/13/07	35	35	16-34	66.0
B45	8/14/07	40	40	15-39	66.0
B46	8/14/07	38	38	16-37	66.5
B47	8/14/07	37	37	15-36	66.5
B48	8/14/07	36	36	17-35	22.0
B49	8/15/07	36	NA	17-35	22.0
B50	8/15/07	34	34	15-33	22.0
B51	8/15/07	35	35	16-34	22.0
B52	8/15/07	37	37	15-36	22.0
B53	8/15/07	36	36	17-35	22.0
B54	8/15/07	35	35	16-34	22.0
B55	8/15/07	36	36	17-35	22.0
B56	8/15/07	40	NA	15-39	58.0

**Table 2A**  
**CAP18 Injection Data**  
**August 1 - September 4, 2007**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, IN**  
**Mundell Project # M01046**

Injection Point	Date of Injection	Depth of Boring (ft)	Depth of Clay till (ft)	Injection Depth Range (ft)	Total Amt CAP18 Injected (gallons)
B57	8/16/07	37	37	15-36	22.0
B58	8/16/07	36	36	17-35	22.0
B59	8/16/07	37	37	15-36	22.0
B60	8/16/07	35	35	16-34	22.0

Table 2A CAP18 Injection Data August 1 - September 4, 2007 Michigan Plaza 3801-3823 West Michigan Street Indianapolis, IN Mundell Project # M01046					
Injection Point	Date of Injection	Depth of Boring (ft)	Depth of Clay till (ft)	Injection Depth Range (ft)	Total Amt CAP18 Injected (gallons)
<b>Source Area C:</b>					
C1	8/27/07	32	32	16-31	66.0
C2	8/27/07	31	31	15-30	66.0
C3	8/27/07	32	32	16-31	66.0
C4	8/27/07	32	NA	16-31	66.0
C5	8/27/07	34	34	15-33	66.0
C6	8/27/07	32	NA	16-31	66.0
C7	8/27/07	34	34	15-33	52.0
C8	8/28/07	34	34	15-33	52.0
C9	8/28/07	36	NA	17-35	52.0
C10	8/28/07	34	NA	15-33	52.0
C11	8/28/07	36	NA	17-35	52.0
C12	8/28/07	35	NA	16-34	52.0
C13	8/28/07	31	NA	15-30	52.0
C14	8/29/07	32	32	16-31	52.0
C15	8/29/07	35	35	16-34	52.0
C16	8/29/07	32	32	16-31	52.0
C17	8/29/07	32	32	16-31	52.0
C18	8/29/07	32	32	16-31	52.0
C19	8/29/07	34	34	15-33	52.0
C20	8/29/07	34	34	15-33	52.0
C21	8/30/07	30	NA	17-29	17.3
C22	8/30/07	32	32	16-31	17.5
C23	8/30/07	31	NA	15-30	17.3
C24	8/30/07	32	NA	16-31	17.5
C25	8/30/07	32	NA	16-31	17.3
C26	8/30/07	34	NA	15-33	52.0
C27	8/30/07	34	NA	15-33	17.5
C28	8/30/07	34	NA	15-33	17.3
C29	8/30/07	30	30	17-29	52.0
C30	8/31/07	35	35	16-34	17.5
C31	8/31/07	36	NA	17-35	17.3
C32	8/31/07	33	NA	17-32	17.5
C33	8/31/07	31	31	15-30	52.0
C34	8/31/07	31	31	15-30	17.3
C35	8/31/07	31	31	15-30	17.5
C36	8/31/07	35	35	16-34	17.3
C37	8/31/07	32	NA	16-31	17.5
C38	8/31/07	31	31	15-30	52.0
C39	8/31/07	NA	NA	NA	17.3
C40	9/4/07	32	NA	16-31	30.0

**Table 2B**  
**CAP18 Injection Data**  
**February 4-12, 2009**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, IN**  
**Mundell Project # M01046**

Injection Point	Date of Injection	Depth of Boring (ft)	Depth of Clay till (ft)	Injection Depth Range (ft)	Total Amt CAP18 Injected (gallons)
-----------------	-------------------	----------------------	-------------------------	----------------------------	------------------------------------

**Source Area B:**

B-1	2/9/09	38	38	20-38	65.0
B-2	2/9/09	38	38	20-38	65.0
B3	2/9/09	35	35	20-35	65.0
B-4	2/9/09	38	38	20-38	65.0
B-5	2/9/09	38	38	20-38	65.0
B-6	2/10/09	39	39	20-38	65.0
B-7	2/10/09	38	38	20-38	65.0
B-8	2/9/09	38	38	20-38	65.0
B-9	2/10/09	38	38	20-38	65.0

**Source Area C:**

C-1	2/11/09	40	40	22-40	65.0
C-2	2/11/09	36	36	15-36	65.0
C-3	2/11/09	36	36	15-36	64.0
C-4	2/11/09	36	36	15-36	65.0
C-5	2/11/09	36	36	15-36	65.0
C-6	2/12/09	36	36	15-36	65.0
C-7	2/12/09	36	36	15-36	65.0
C-8	2/12/09	36	36	15-36	65.0
C-9	2/12/09	36	36	15-36	65.0
C-10	2/12/09	36	36	15-36	65.0
C-11	2/12/09	36	36	15-36	65.0
C-12	2/12/09	36	36	15-36	65.0
C-13	2/12/09	36	36	15-36	65.0

**Soil Borings:**

SB-1	2/4/09	32	32	20-32	64.0
SB-2	2/4/09	32	32	20-32	64.0
SB-3	2/5/09	32	32	20-32	67.0
SB-4	2/5/09	32	32	20-32	67.0
SB-5	2/5/09	32	32	20-32	65.0
SB-6	2/5/09	32	32	20-32	65.0
SB-7	2/5/09	32	32	20-32	65.0

**TABLE 2C.**  
**SUMMARY OF TOTAL CAP18<sup>TM</sup> INJECTION VOLUME**  
**FOR 2007 and 2009 EVENTS**  
**Michigan Plaza, Indianapolis, Indiana**

**2007 TOTAL Injection Quantity = 6,506 gallons**

- **Source Area A:** 1,962 gallons CAP 18<sup>TM</sup> over 8 days of field time.
  - ~ 245 gallons per day.
- **Source Area B:** 2,815 gallons CAP 18<sup>TM</sup> over 12 days of field time.
  - ~ 235 gallons per day.
- **Source Area C:** 1,729 gallons CAP 18<sup>TM</sup> over 5 days of field time.
  - ~ 346 gallons per day.

**2009 TOTAL Injection Quantity = 1,884 gallons**

- **Source Area A:** 455 gallons CAP 18 ME<sup>TM</sup> over 2 days of field time.
  - ~ 228 gallons per day.
- **Source Area B:** 585 gallons CAP 18 ME<sup>TM</sup> over 2 days of field time.
  - ~ 293 gallons per day.
- **Source Area C:** 844 gallons CAP 18 ME<sup>TM</sup> over 2 days field time.
  - ~ 422 gallons per day.

**Average Injection Rate Range = 0.38 to 0.70 gallons per minute (gpm)\***

\*Based on a 10-hour workdays on each of the injections days; this represents an average rate of more than one order of magnitude less than a small, low-flowing garden hose (3/4 in diameter), which is typically rated at about 10 gpm.

**Table 3**  
**Groundwater Level and CAP18 Product Level Monitoring - Post Injection**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**  
**MUNDELL Project No. M01046**

**Table 3**  
**Groundwater Level and CAP18 Product Level Monitoring - Post Injection**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**  
**MUNDELL Project No. M01046**

Monitoring Well	Top of Casing Elevation (feet MSL)	Total Depth (feet)	Date of Reading	Depth To CAP18 (feet)	Depth To Water (feet)	Date of Reading	Depth To CAP18 (feet)	Depth To Water (feet)	Date of Reading	Depth To CAP18 (feet)	Depth To Water (feet)
<b>On-Site Monitoring Wells (Plaza)</b>											
MMW-P-01											
MMW-P-01	715.79	28	8/28/07	NP	19.33	8/29/07	19.38	19.39	8/30/07	NP	19.42
MMW-P-02	716.70	30	8/28/07	NP	20.58	8/29/07	20.59	20.60	8/30/07	NP	20.63
MMW-P-03S	716.55	28	8/28/07	NP	20.27	8/29/07	20.30	20.31	8/30/07	NP	20.36
MMW-P-03D	716.45	35	8/28/07	NP	20.37	8/29/07	NP	20.41	8/30/07	NP	20.45
MMW-P-04	716.27	28	8/28/07	NP	20.07	8/29/07	20.10	20.11	8/30/07	20.14	20.15
MMW-P-05	716.12	28	8/28/07	NP	19.78	8/29/07	NP	19.82	8/30/07	19.88	19.89
MMW-P-06	716.50	28	8/28/07	NP	20.21	8/29/07	NP	20.25	8/30/07	20.30	20.31
MMW-P-07	715.30	28	8/28/07	NP	18.49	8/29/07	NP	18.54	8/30/07	NP	18.59
MMW-P-08	715.22	28	8/28/07	NP	18.34	8/29/07	NP	18.38	8/30/07	NP	18.43
MMW-P-10S	714.59	28	8/28/07	NP	17.74	8/29/07	NP	18.40	8/30/07	NP	18.45
MMW-P-10D	714.98	38	8/28/07	NP	18.34	8/29/07	NP	18.00	8/30/07	NP	18.04
<b>Off-Site Monitoring Wells (Michigan Meadows Apartments)</b>											
MMW-1S	713.66	20	8/28/07	NP	15.99	8/29/07	16.03	16.04	8/30/07	16.09	16.10
MMW-8S	714.75	24	8/28/07	NP	17.02	8/29/07	NP	17.09	8/30/07	NP	17.13
MMW-9S	714.09	25	8/28/07	NP	17.14	8/29/07	NP	17.16	8/30/07	NP	17.24
MMW-10S	713.23	25	8/28/07	NP	15.85	8/29/07	15.90	15.91	8/30/07	NP	15.96

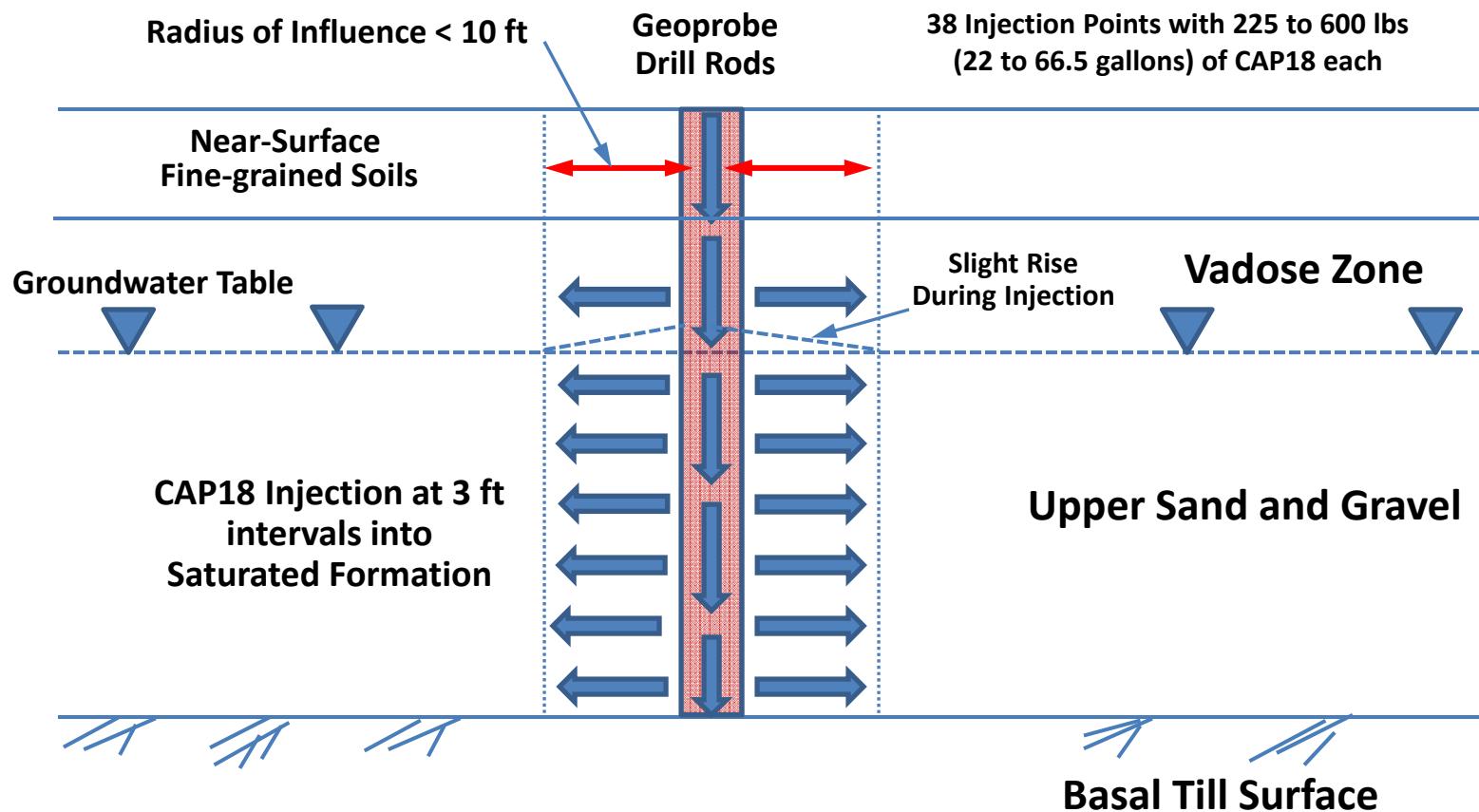
**Table 3**  
**Groundwater Level and CAP18 Product Level Monitoring - Post Injection**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**  
**MUNDELL Project No. M01046**

Monitoring Well	Top of Casing Elevation (feet MSL)	Total Depth (feet)	Date of Reading	Depth To CAP18 (feet)	Depth To Water (feet)	Date of Reading	Depth To CAP18 (feet)	Depth To Water (feet)	Date of Reading	Depth To CAP18 (feet)	Depth To Water (feet)
<b>On-Site Monitoring Wells (Plaza)</b>											
MMW-P-01											
MMW-P-01	715.79	28	8/31/07	NP	19.45	9/4/07	NP	19.55	--	--	--
MMW-P-02	716.70	30	8/31/07	20.66	20.67	9/4/07	NP	20.76	--	--	
MMW-P-03S	716.55	28	8/31/07	NP	20.46	9/4/07	NP	20.58	10/25/07	20.56	20.58
MMW-P-03D	716.45	35	8/31/07	NP	20.48	9/4/07	NP	20.57	10/25/07	NP	20.46
MMW-P-04	716.27	28	8/31/07	NP	20.16	9/4/07	NP	20.27	10/25/07	19.98	19.99
MMW-P-05	716.12	28	8/31/07	NP	19.90	9/4/07	NP	20.01	--		
MMW-P-06	716.50	28	8/31/07	NP	20.33	9/4/07	NP	20.42	10/25/07	20.39	20.40
MMW-P-07	715.30	28	8/31/07	NP	18.61	9/4/07	NP	18.71	10/25/07	18.61	18.62
MMW-P-08	715.22	28	8/31/07	NP	18.46	9/4/07	NP	18.56	10/25/07	18.89	18.90
MMW-P-10S	714.59	28	8/31/07	NP	18.46	9/4/07	NP	18.17	--		
MMW-P-10D	714.98	38	8/31/07	NP	18.06	9/4/07	NP	18.58	--		
<b>Off-Site Monitoring Wells (Michigan Meadows Apartments)</b>											
MMW-1S	713.66	20	8/31/07	NP	16.14	9/4/07	NP	16.25	10/25/07	16.03	16.04
MMW-8S	714.75	24	8/31/07	NP	17.19	9/4/07	NP	17.29	--		
MMW-9S	714.09	25	8/31/07	NP	17.24	9/4/07	17.35	17.36	10/25/07	17.17	17.18
MMW-10S	713.23	25	8/31/07	NP	16.00	9/4/07	NP	16.09	--		

## **FIGURES**

**Figure 1 - Typical Cross-Section CAP18™ Injection  
Chemical Source Area A**

**August 2007**



**MUNDELL & ASSOCIATES, INC.**  
**FIELD BORING LOG**

**Injection NO: B-1**

				DATE BEGAN: 2/9/2009 (10:00AM)
				DATE FINISHED: 2/9/2009 (10:33 AM)
				DRILLING MEATHOD: Direct Push
				DRILL EQUIP: Geoprobe
				GW Depth (OBSERVED):
				DEPTH OF BORING: 38ft.
				SURFACE ELEVATION: N/A
				TOP OF CASING ELEVATION: N/A
GEOLOGIC DESCRIPTION	STRATUM DEPTH, ft	DEPTH FT	GALLONS INJECTED PER INTERVAL	COMMENTS
Ground surface is Asphalt.		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	11	
		21 22 23	11	
		24 25 26	11	
		27 28 29	11	
		30 31 32	11	
		33 34 35	5	
		36 37 38	5	Total 65 Gallons
		39 40 41 42 43 44 45 46 47 48 49 50		
Water Level Observations: Noted on Rods: _____ At Completion:	Sampling Methods: LBS - Large Bore Sampler MBS - Macro Bore Sampler HSA - Hollow Stem Auger GEO - Geoprobe	Notes: TPV - Total Photoionizable Vapors ND - Not Detected * - Water Sample(s) Retained for Laboratory Analysis		Page <u>1</u> of _____

# **Figure 3A – Photo of CAP-18 Injection Process**

## **August 2007**



**Figure 3B – Photo of CAP-18 Injection Process**  
**August 2007**



**Figure 3C – Photo of CAP-18 Injection Process**  
**August 2007**



**Figure 3D – Photo of CAP-18 Injection Process**  
**August 2007**



**Figure 3E – Photo of CAP-18 Injection Process**  
**August 2007**

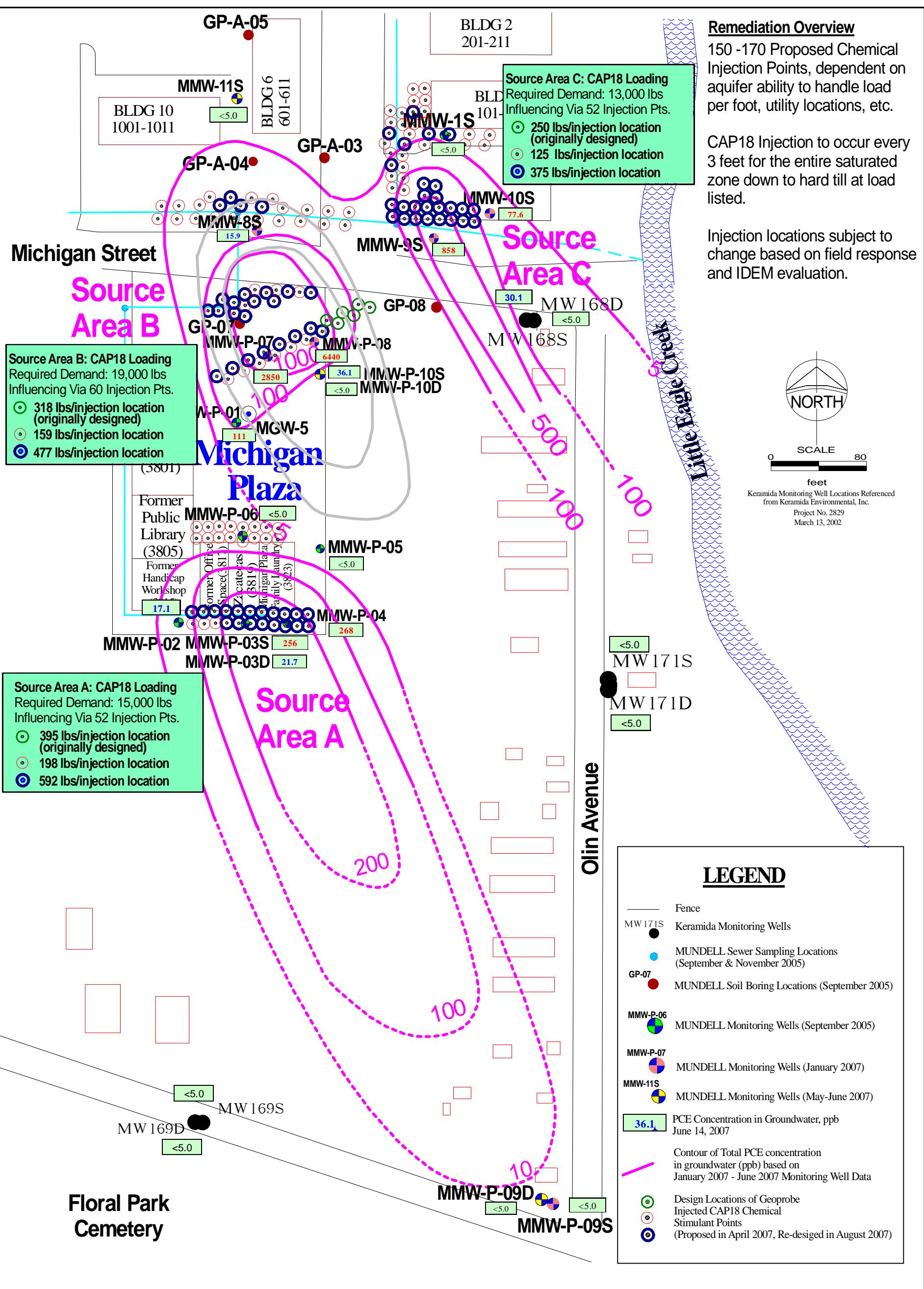


## **Figure 3F – Photo of CAP-18 Injection Process**

### **August 2007**



08/02/2007



**MUNDELL & ASSOCIATES, INC.**

Consulting Professionals for the Earth & Environment

429 East Vermont Street, Suite 200  
Indianapolis, Indiana 46202-3688  
317-630-9060, fax 317-630-9065

Project Number:	M01046
Drawing File:	Remediation Opt 3
Date Prepared:	8/2/07
Scale:	1"=80'

**AUGUST - 07 REMEDIAL DESIGN**  
Michigan Plaza  
3801-3823 West Michigan Street  
Indianapolis, Indiana

**FIGURE**

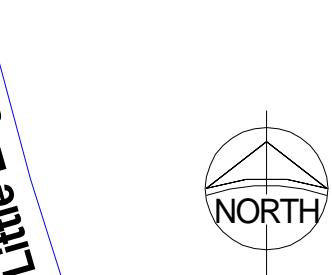
**4**

## Round 2: Application Overview

Approx. 33-35 Chemical Injection Points, with varying loads dependent on aquifer ability to handle load per foot, utility locations, etc.

CAP-18 Injection occurred every 3 feet for the entire saturated zone down to hard till at load listed. General loading typically injected twice as much CAP18 in upper portion as lower portion of injection point.

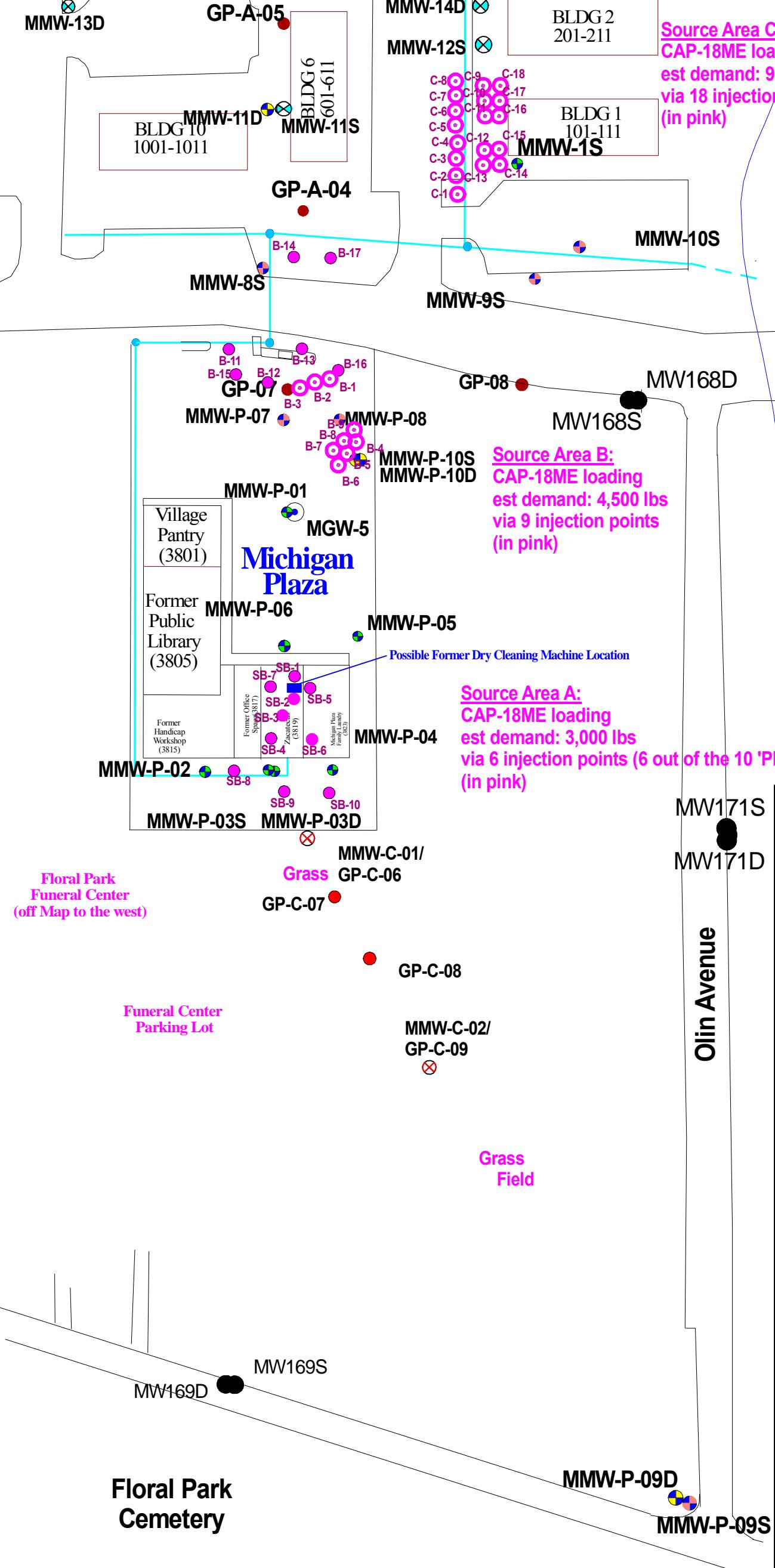
Michigan Street



Keramida Monitoring Well Locations Referenced from Keramida Environmental, Inc.  
Project No. 2829  
March 13, 2002

## LEGEND

- Roadway
- MW171S Keramida Monitoring Wells
- MUNDELL Sewer Sampling Locations (September & November 2005)
- GP-07 MUNDELL Soil Boring Locations (September 2005)
- MUNDELL Monitoring Wells (September 2005)
- MUNDELL Monitoring Wells (January 2007)
- MUNDELL Monitoring Wells (May-June 2007)
- MMW-P-06
- MMW-P-07
- MMW-11S
- B-4 ● Locations of Geoprobe Injected CAP-18 Chemical Stimulant (Round 2) (greater than 400 lbs)
- MMW-C-02/ GP-C-09 MUNDELL Monitoring Wells (August 2008)
- PMW-12D MUNDELL Deep Monitoring Wells (September 2008)
- SB-4 ● MUNDELL Soil Boring Locations which could be potential CAP-18 injection point



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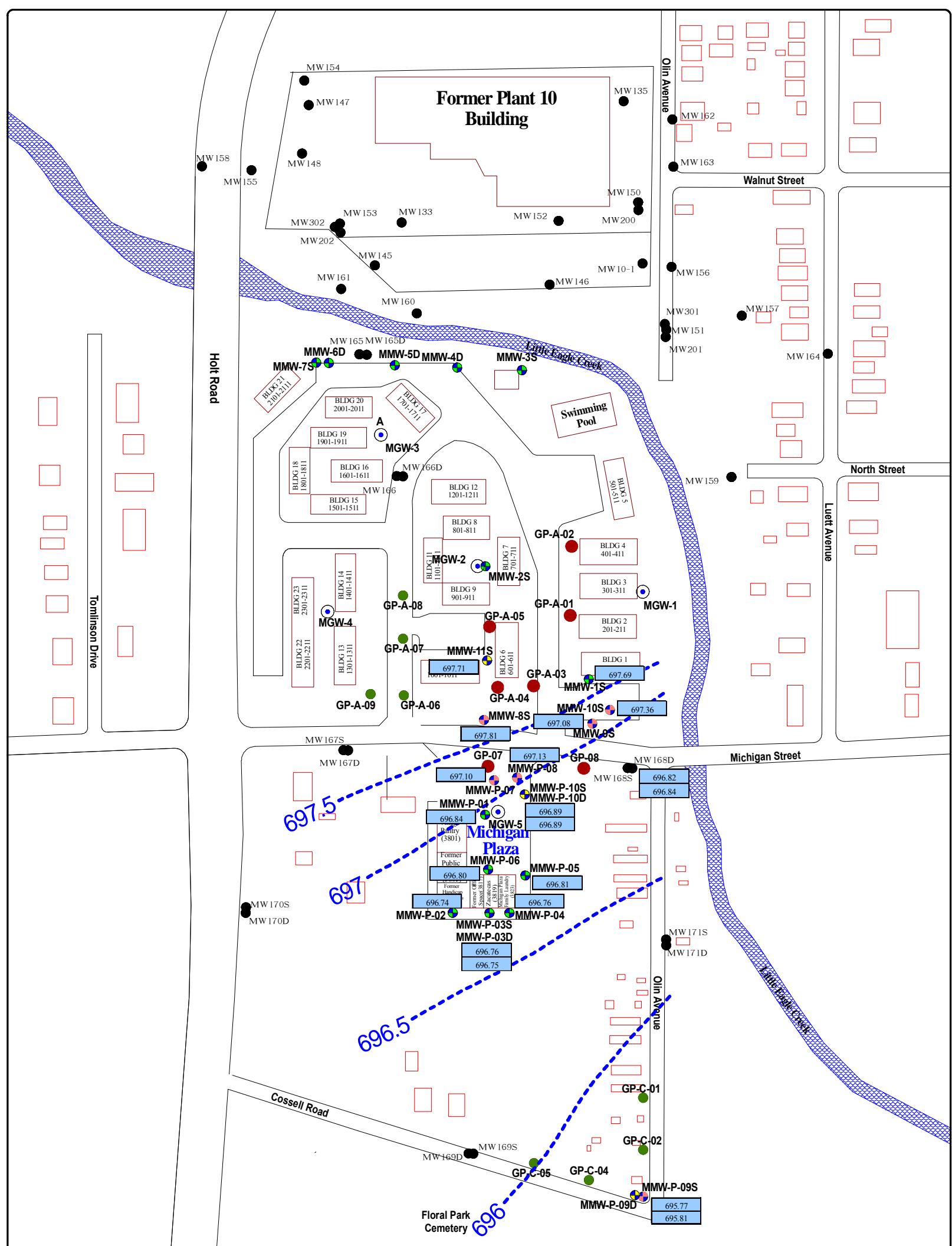
110 South Downey Avenue  
Indianapolis, Indiana 46219  
317-630-9060, fax 317-630-9065

Project Number:  
M01046  
Drawing File:  
  
Date Prepared:  
7/17/09  
Scale:  
1"=80'

**CAP18 INJECTION REMEDIATION  
(Round 2 - February 2009)**

Michigan Plaza  
3801-3823 West Michigan Street  
Indianapolis, Indiana

**FIGURE  
5**



## LEGEND

MW 160 ● Keramida Monitoring Wells

**MMW-11S**  MUNDELL Monitoring Wells (May-June 2007)

SS-P-01 ● MUNDELL Sewer Sampling Locations (September & November 2005)

GP-07 ● MUNDELL Soil Boring Locations (September 2018)

**MMW-P-06** MUNDELL Monitoring Wells, Michigan Plaza (September 2005)

GP-C-04 MUNDELL Soil Boring Locations (January 2007)

MONDELL Monitoring Wells (January 2007)

# MUNDELL & ASSOCIATES, INC.

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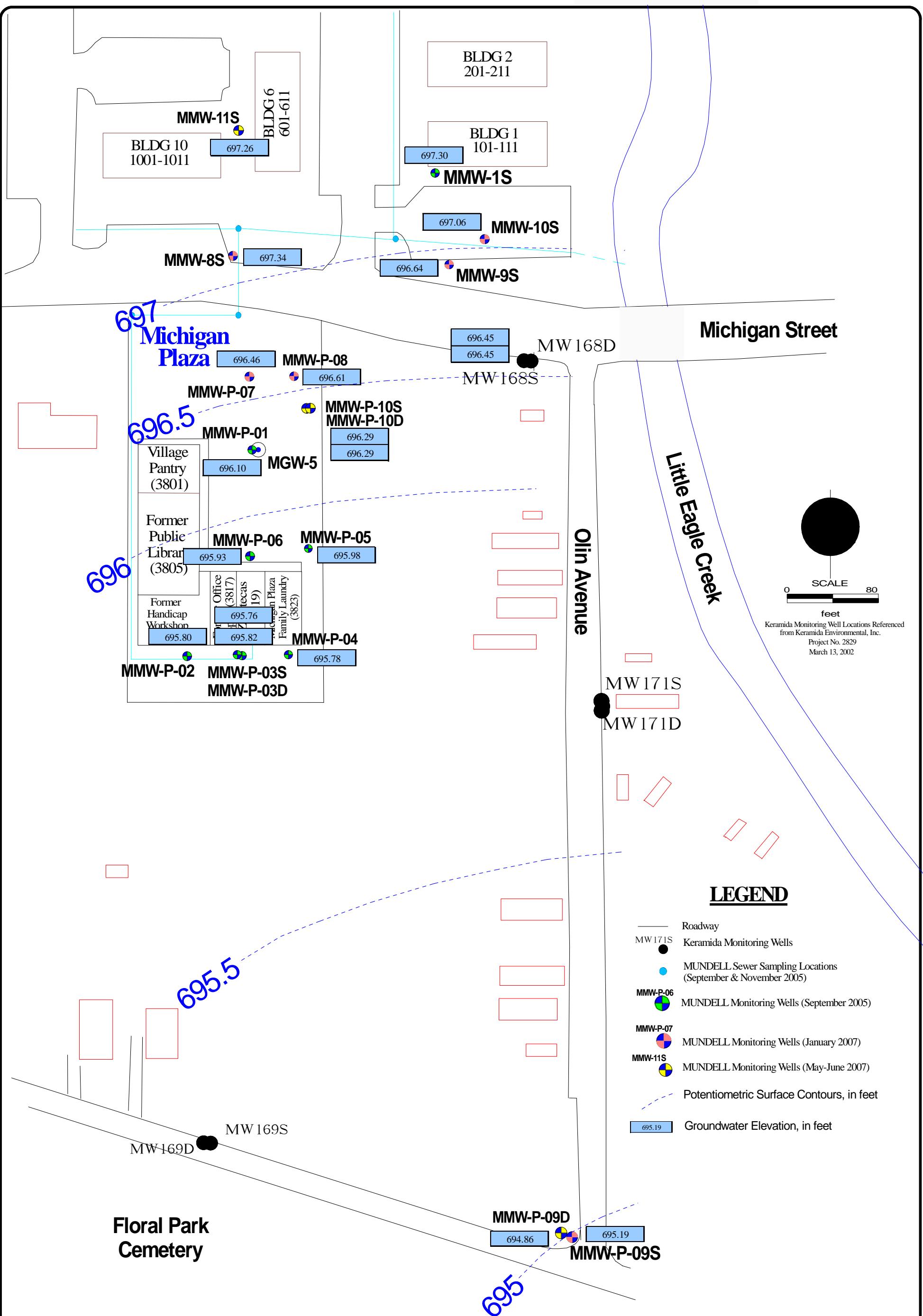
429 East Vermont Street, Suite 200  
Indianapolis, Indiana 46202-3688

Project Number:
M01046
Drawing File:
Base Map.SKF
Date Prepared:
7/3/07
Scale:
1"=200' ±

**Potentiometric Surface Map  
June 14, 2007  
Michigan Plaza  
3801-3823 West Michigan Street  
Indianapolis, Indiana**

# FIGURE

# 6



**MUNDELL & ASSOCIATES, INC.**

*Consulting Professionals for the Earth & Environment*

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317-630-9060, fax 317-630-9065

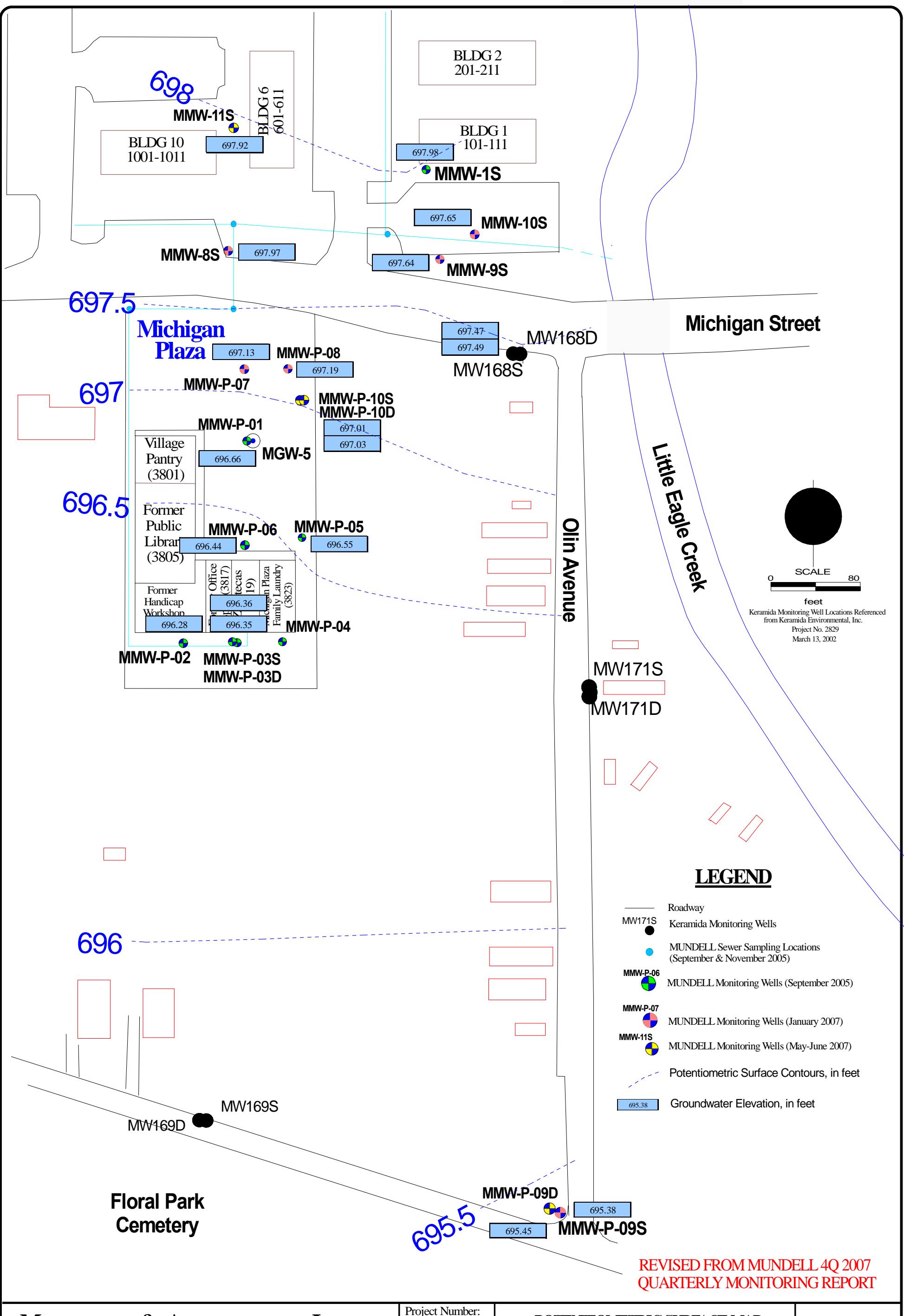
Project Number: M01046  
Drawing File: Basemap\_rev2  
Date Prepared: 11/6/07  
Scale: 1"=80'±

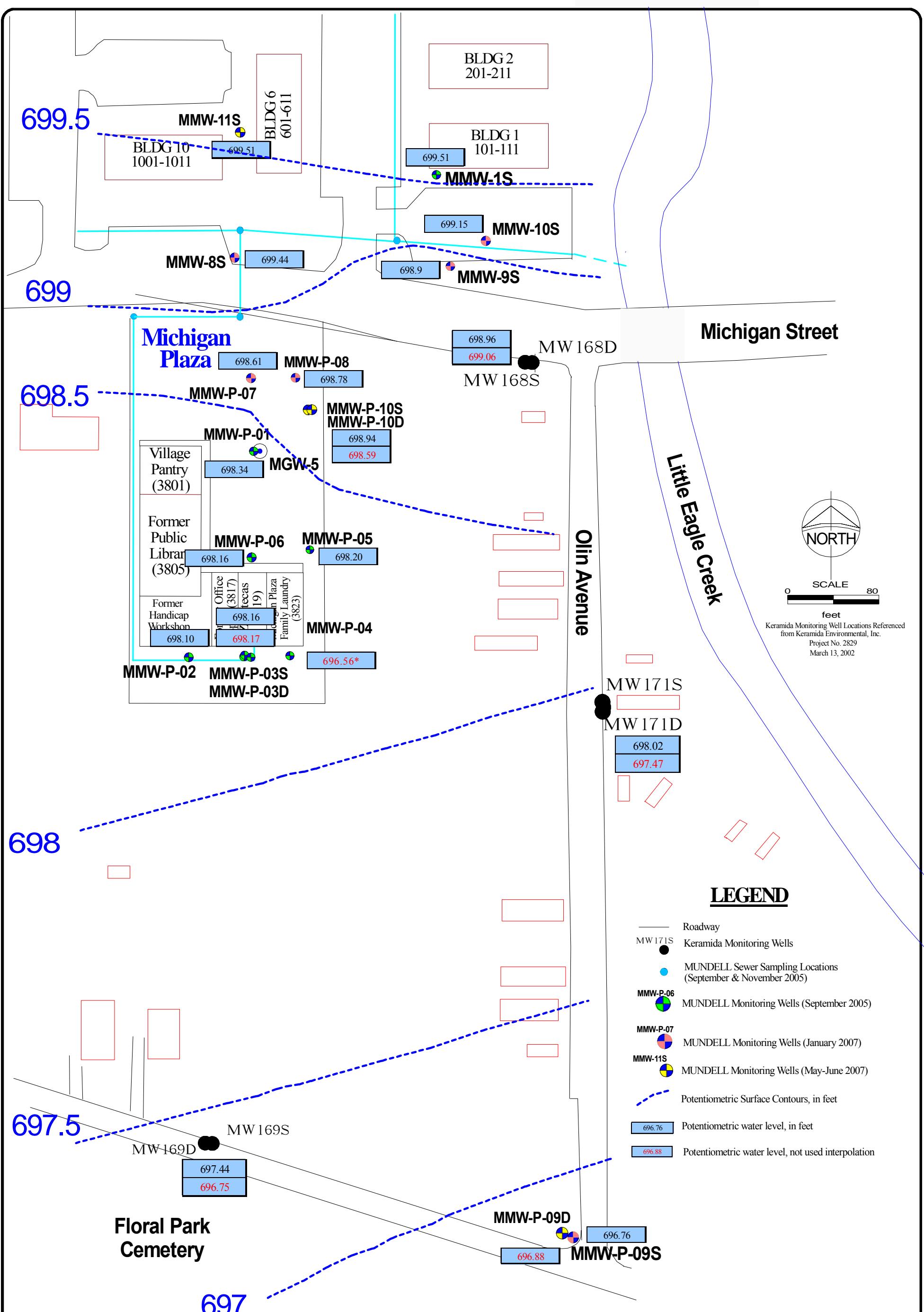
**POTENTIOMETRIC SURFACE MAP**

**September 19, 2007**

**Michigan Plaza  
3801-3823 West Michigan Street  
Indianapolis, Indiana**

**FIGURE  
7**





MUNDELL & ASSOCIATES, INC.

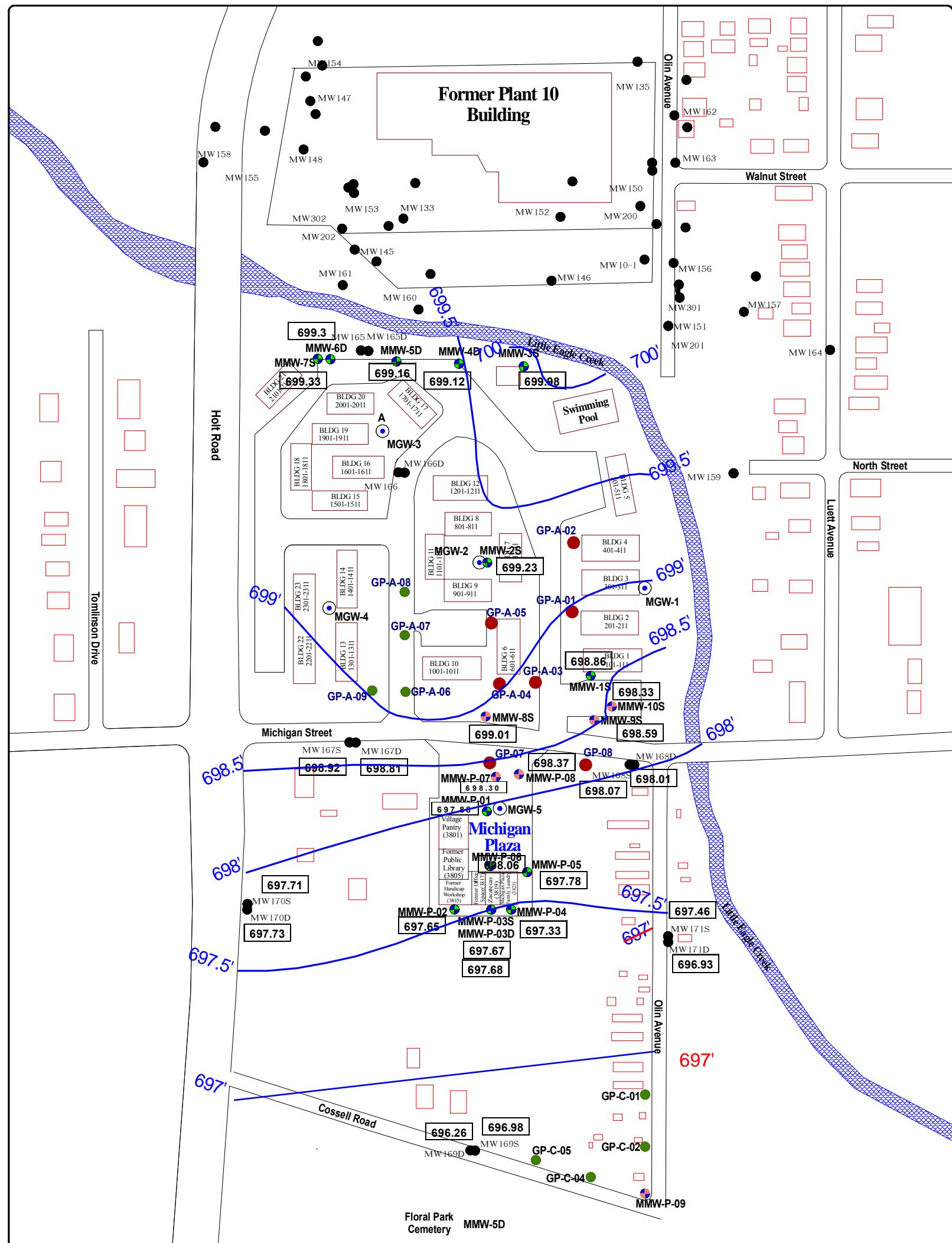
**MORDELL & ASSOCIATES, INC.**  
*Consulting Professionals for the Earth & Environment*

*110 South Downey Avenue  
Indianapolis, Indiana 46219  
317-630-9060 fax 317-630-9065*

Project Number:
M01046
Drawing File:
Basemap_rev2
Date Prepared:
4/16/08
Scale:
1"=80' +

**POTENTIOMETRIC SURFACE MAP**  
**March 21, 2008**  
Michigan Plaza  
3801-3823 West Michigan Street  
Indianapolis, Indiana

# FIGURE 9



### LEGEND

- Fence
- MW 160 ● Keramida Monitoring Wells
- SSP-01 ● MUNDELL Sewer Sampling Locations (September & November 2005)
- GP-07 ● MUNDELL Soil Boring Locations (September 2005)
- MMW-P-06 ● MUNDELL Monitoring Wells, Michigan Plaza (September 2005)
- GP-C-05 ● MUNDELL Soil Boring Locations (January 2007)
- MMW-P-07 ● MUNDELL Monitoring Wells (January 2007)
- Water Level as Measured on February 21, 2007
- Potentiometric Surface Equal Potential Lines

Revised from MUNDELL 2Q  
2009 Quarterly Monitoring  
Report

Keramida Monitoring Well Locations Referenced  
from Keramida Environmental, Inc.

Project No. 2829  
March 13, 2002

**MUNDELL & ASSOCIATES, INC.**

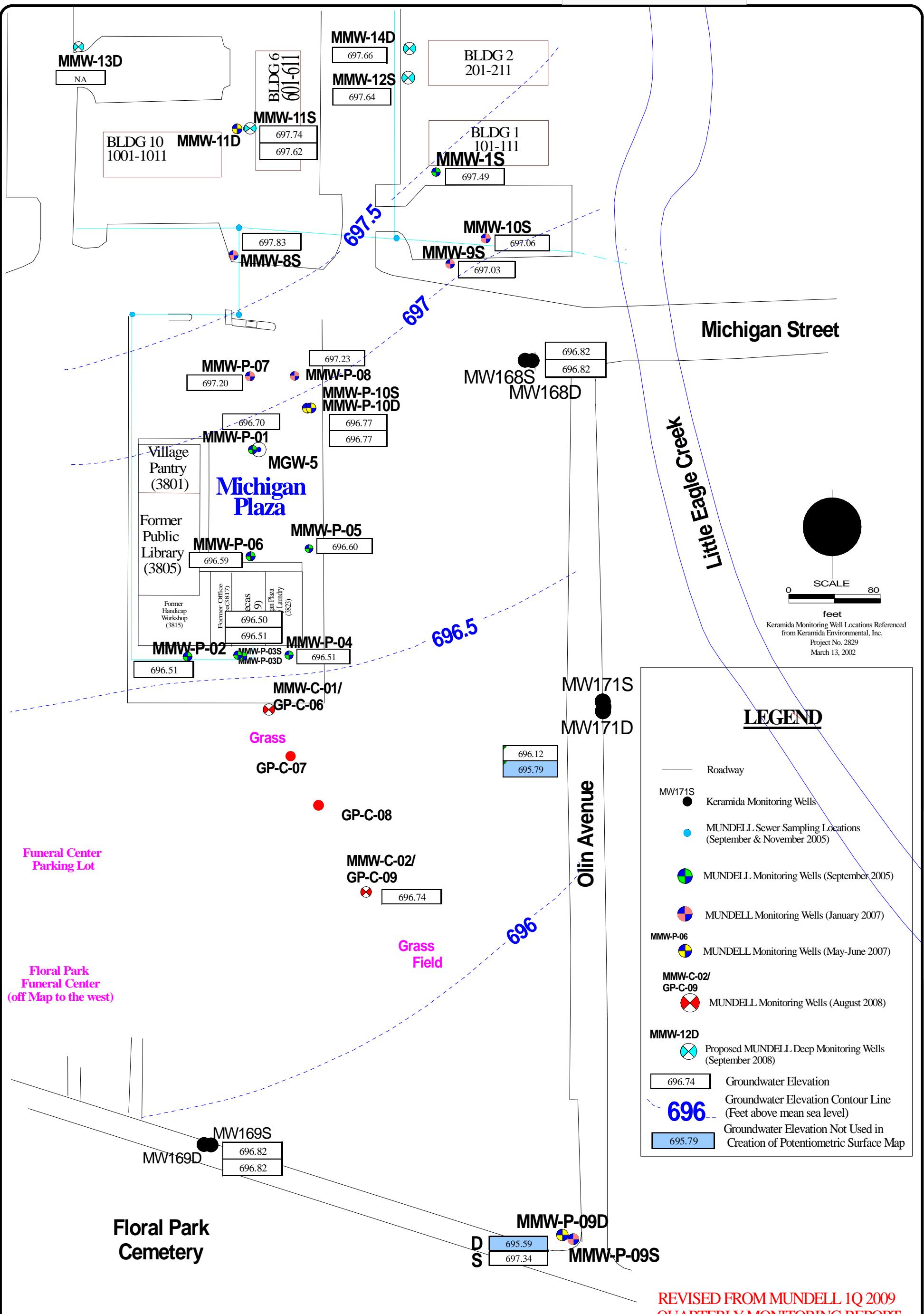
Consulting Professionals for the Earth & Environment

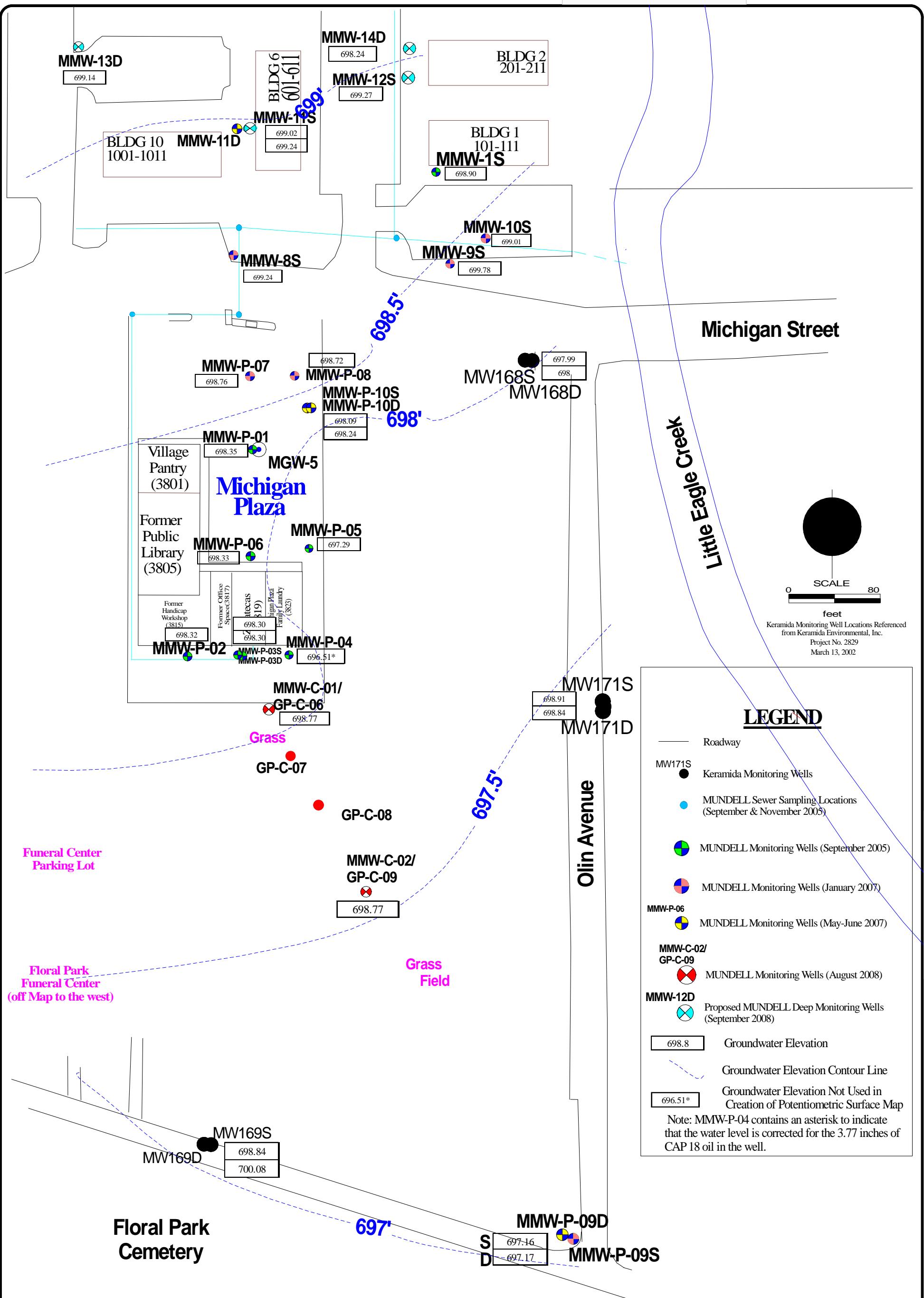
429 East Vermont Street, Suite 200  
Indianapolis, Indiana 46202-3688  
317-630-9060, fax 317-630-9065

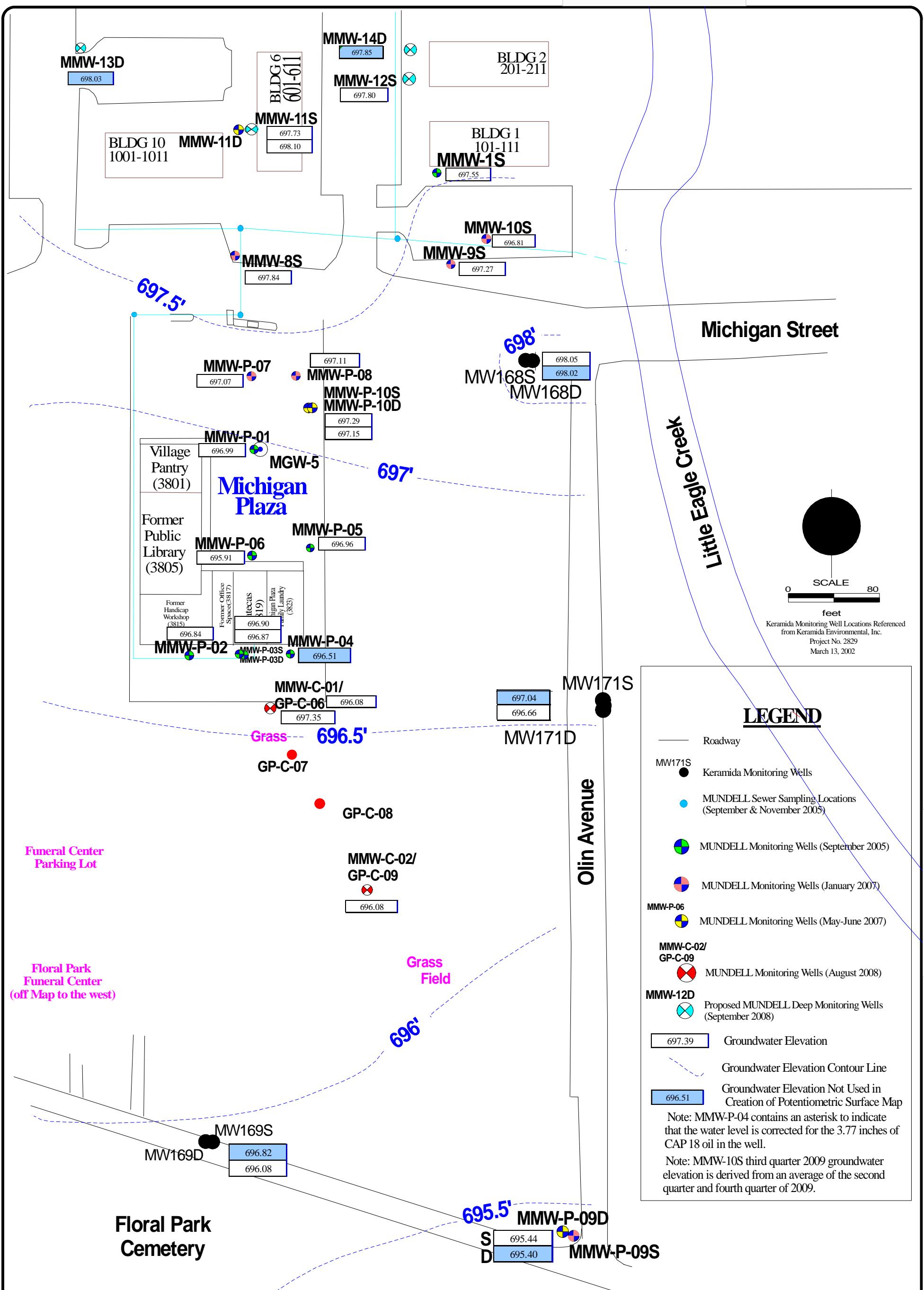
Project Number:  
M01046  
Drawing File:  
Base Map.SKF  
Date Prepared:  
6/23/08  
Scale:  
1"=200'±

Shallow Potentiometric Surface Map  
June 2, 2008  
Michigan Plaza  
3801-3823 West Michigan Street  
Indianapolis, Indiana

FIGURE  
**10**







MUNDELL & ASSOCIATES, INC.

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Indianapolis, Indiana 46219  
317-630-9060 fax 317-630-9065*

Project Number  
M01046

**M01046**  
**Drawing File:**

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Date Prepared:

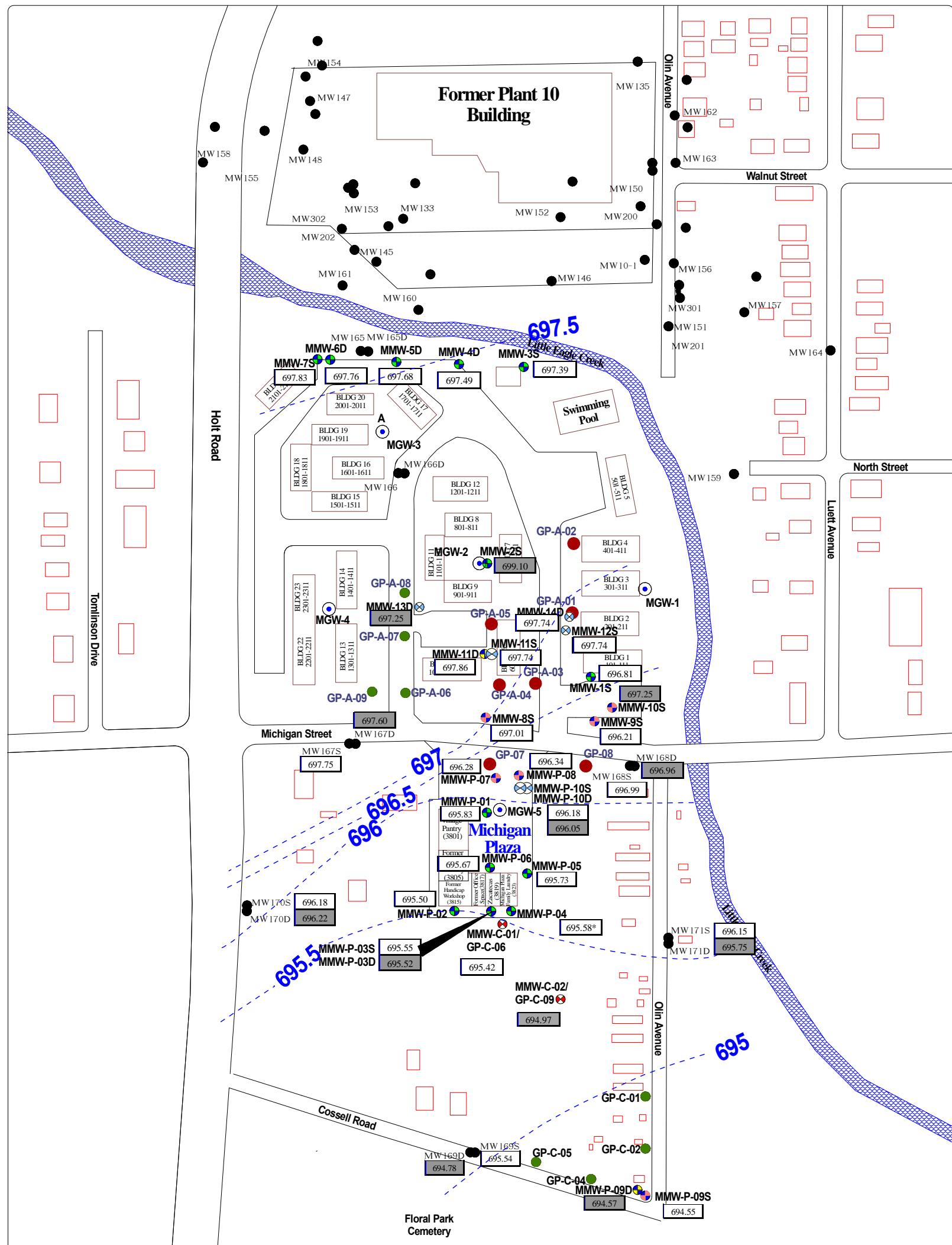
7/27/09

### Potentiometric Surface Map

August 5, 2009

Michigan Plaza  
3801-3823 West Michigan Street  
Indianapolis, Indiana

# FIGURE 13



**MUNDELL & ASSOCIATES, INC.**

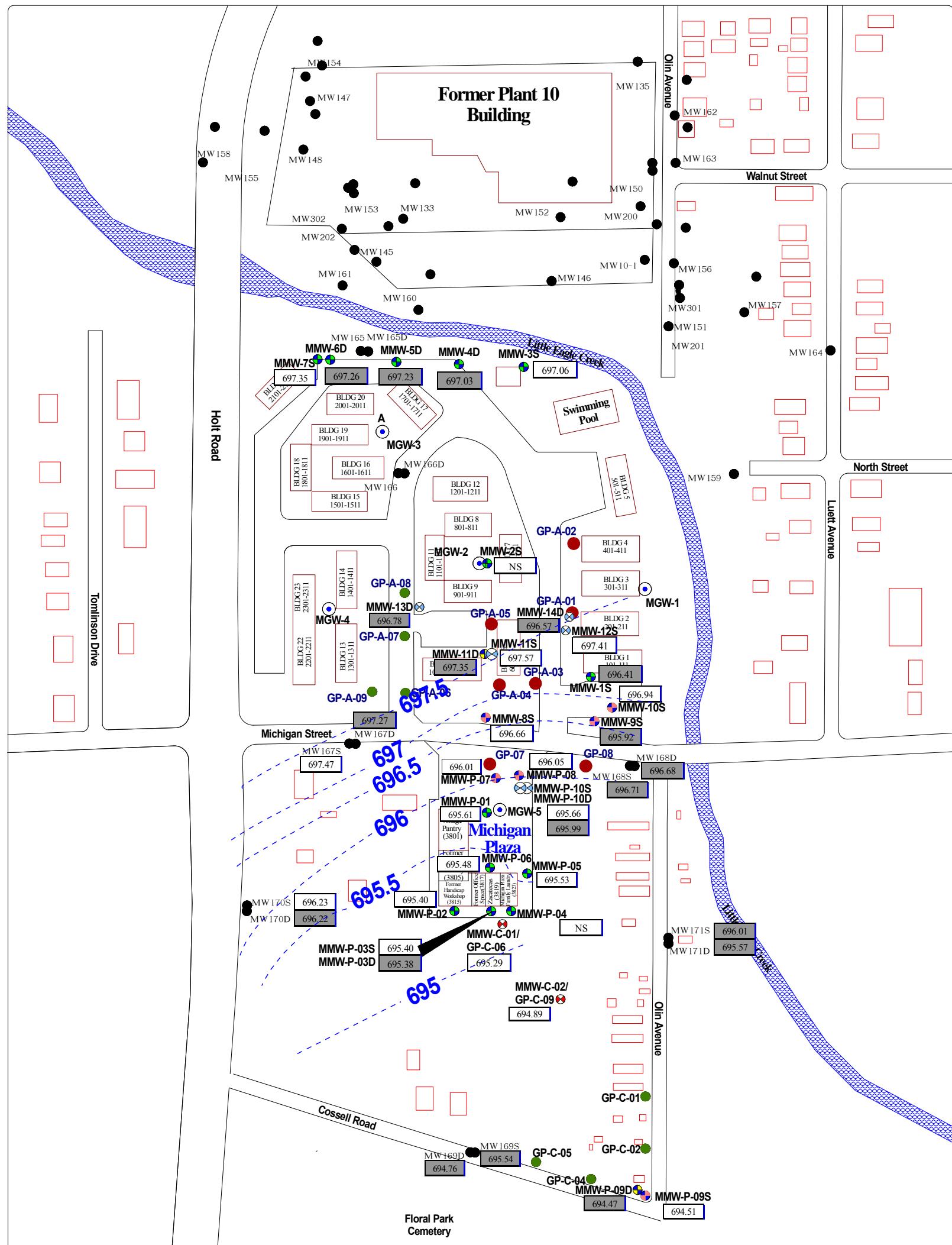
Consulting Professionals for the Earth & Environment

110 South Downey Avenue  
Indianapolis, Indiana 46219-6406  
317-630-9060, fax 317-630-9065

Project Number:  
M01046  
Drawing File:  
Base Map.SKF  
Date Prepared:  
12/29/09  
Scale:  
1"=200'±

**Shallow Potentiometric Surface Map**  
November 2, 2009  
Michigan Plaza  
3801-3823 West Michigan Street  
Indianapolis, Indiana

**FIGURE**  
**14**



### LEGEND

- Fence  
 ● MW 160 Keramida Monitoring Wells  
 ● SS-P-01 MUNDELL Sewer Sampling Locations (September & November 2005)  
 ● GP-07 MUNDELL Soil Boring Locations (September 2005)  
 ● MMW-P-06 MUNDELL Monitoring Wells, Michigan Plaza (September 2005)  
 ● GP-C-05 MUNDELL Soil Boring Locations (January 2007)  
 ● MMW-P-07 MUNDELL Monitoring Wells (January 2007)  
 ● MMW-P-09D MUNDELL Monitoring Wells (May-June 2007)  
 ● MMW-C-01/ GP-C-06 MUNDELL Monitoring Wells (August 2008)  
 ✕ MMW-11S MUNDELL Monitoring Wells (September 2008)  
 [697.03] Water Level as Measured on February 3, 2010 (gray boxes indicate groundwater elevation values not used for the creation of the Potentiometric Surface Map)  
 699 Dashed line Potentiometric Surface Equal Potential Lines

Keramida Monitoring Well Locations Referenced from Keramida Environmental, Inc.  
Project No. 2829  
March 13, 2002



SCALE  
0 feet 200

**MUNDELL & ASSOCIATES, INC.**

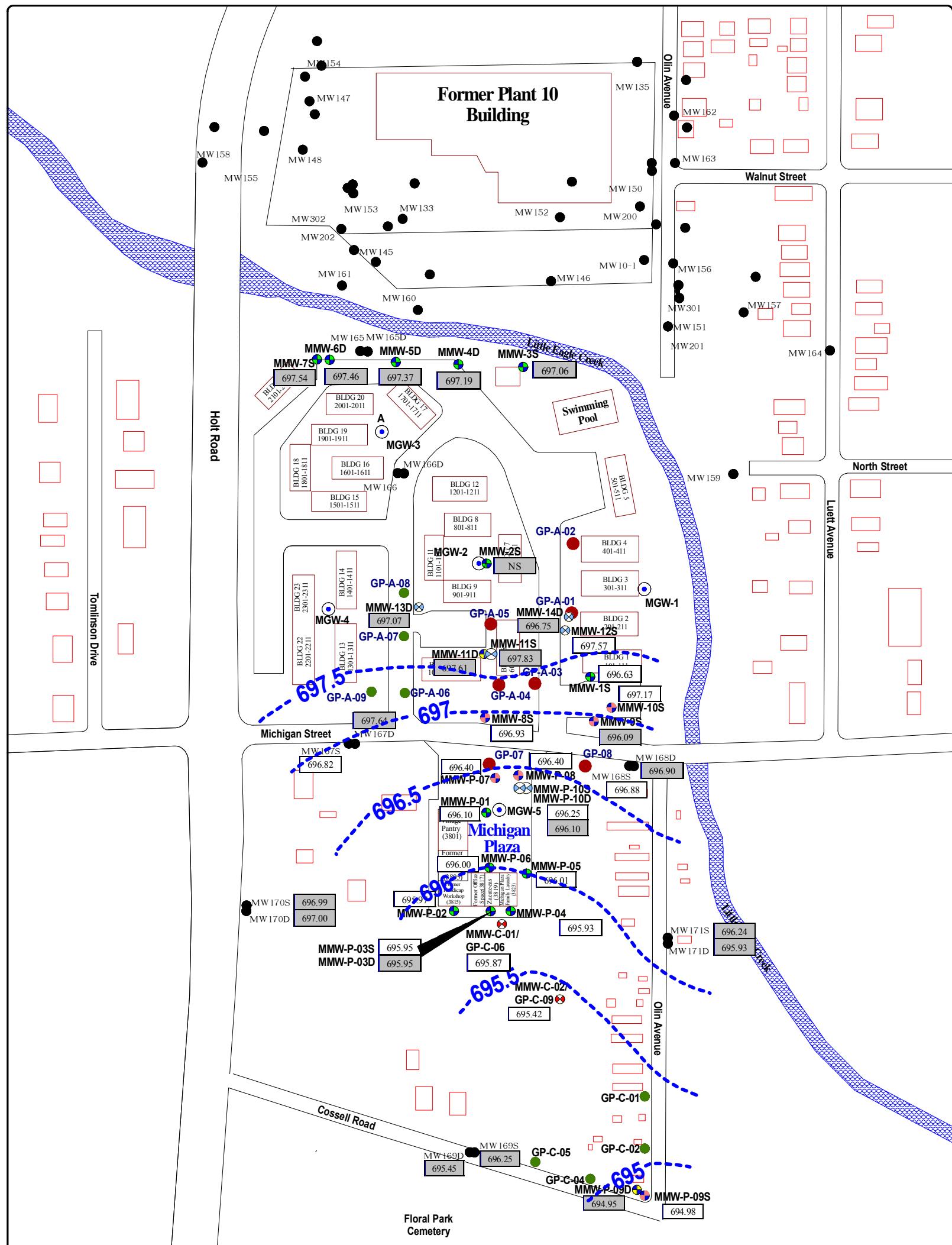
Consulting Professionals for the Earth & Environment

110 South Downey Avenue  
Indianapolis, Indiana 46219-6406  
317-630-9060, fax 317-630-9065

Project Number: M01046  
Drawing File: Base Map.SKF  
Date Prepared: 2/12/10  
Scale: 1"=200'±

**Shallow Potentiometric Surface Map**  
**February 3rd, 2010**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**

**FIGURE**  
**15**



### LEGEND

- Fence
- MW 160 ● Keramida Monitoring Wells
- SS-P-01 ● MUNDELL Sewer Sampling Locations (September & November 2005)
- GP-07 ● MUNDELL Soil Boring Locations (September 2005)
- MMW-P-06 ● MUNDELL Monitoring Wells, Michigan Plaza (September 2005)
- GP-C-05 ● MUNDELL Soil Boring Locations (January 2007)
- MMW-P-07 ● MUNDELL Monitoring Wells (January 2007)
- MMW-P-09D ● MUNDELL Monitoring Wells (May-June 2007)
- MMW-C-01/ GP-C-06 ● MUNDELL Monitoring Wells (August 2008)
- GP-C-06 ● MUNDELL Monitoring Wells (September 2008)
- 697.03 Water Level as Measured on February 3, 2010 (gray boxes indicate groundwater elevation values not used for the creation of the Potentiometric Surface Map)
- 699 Dashed line Potentiometric Surface Equal Potential Lines



Keramida Monitoring Well Locations Referenced from Keramida Environmental, Inc.  
Project No. 2829  
March 13, 2002

**MUNDELL & ASSOCIATES, INC.**

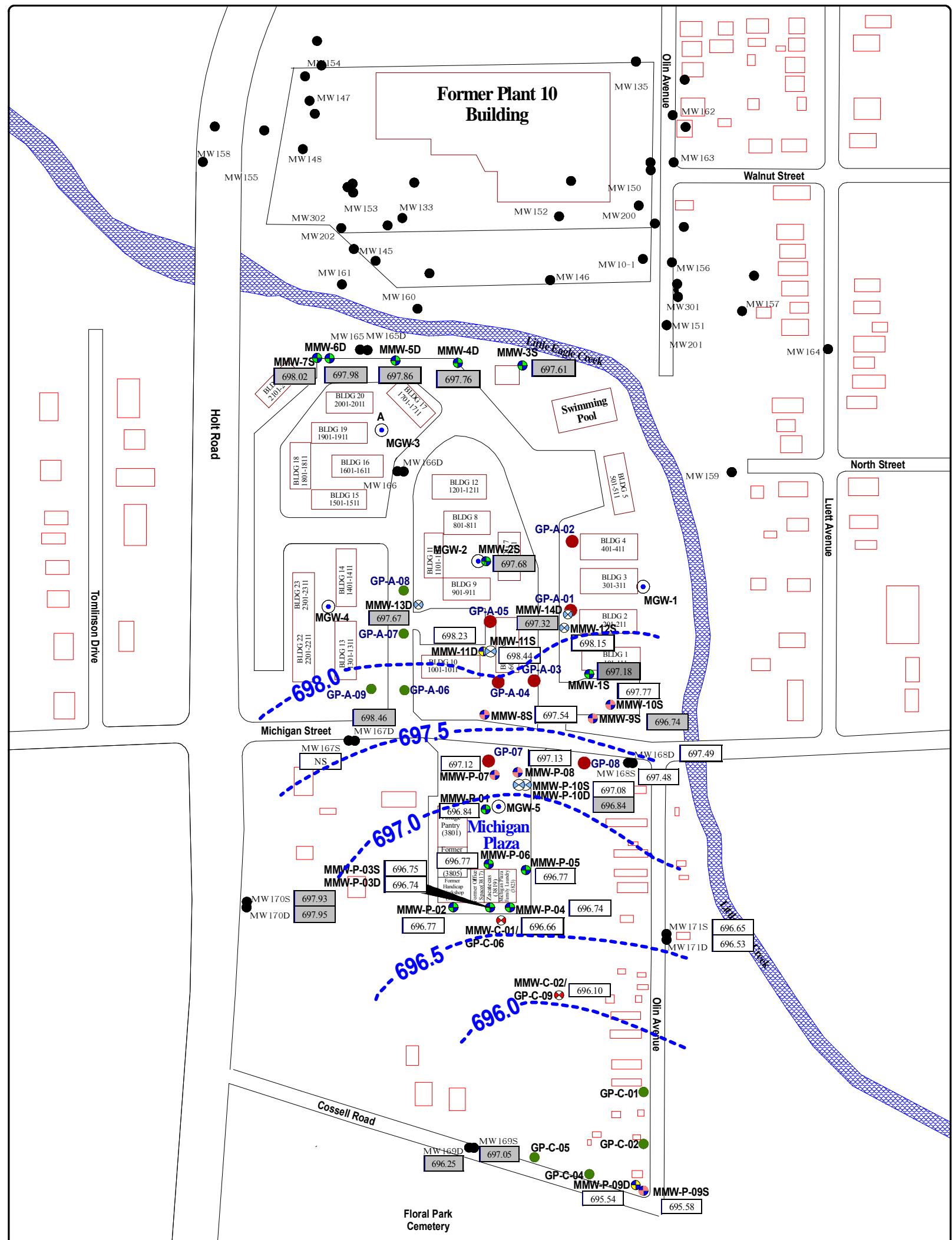
Consulting Professionals for the Earth & Environment

110 South Downey Avenue  
Indianapolis, Indiana 46219-6406  
317-630-9060, fax 317-630-9065

Project Number: M01046  
Drawing File: Base Map.SKF  
Date Prepared: 5/3/10  
Scale: 1"=200'±

**Shallow Potentiometric Surface Map**  
**April 20, 2010**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**

**FIGURE**  
**16**



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## LEGEND

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- Fence

MW 160 ●

**SS-P-01** ● MUNDELL Sewer Sampling Locations (September & November 2005)

GP-07 ● MUNDELL Soil Boring Locations (September 2005)

**MMW-P-06** ● MUNDELL Monitoring Wells, Michigan Plaza (September 2005)

**GP-C-05** ● MUNDELL Soil Boring Locations (January 2007)

**MMW-P-07** ● MUNDELL Monitoring Wells (January 2007)

**MMW-P-09D** ● MUNDELL Monitoring Wells (May-June 2007)

MMW-C-01/ ✘ MUNDELL Monitoring Wells (August 2008)

GP-C-06 ✘ MUNDELL Monitoring Wells (September 2008)

MMW-11S ✘ MUNDELL Monitoring Wells (September 2008)

Water Level as Measured on July 20, 2010 (gray boxes indicate groundwater elevation values not used for the creation of the Potentiometric Surface Map)

99 - - - - - Potentiometric Surface Equal Potential Lines

**feet**

Project No. 2829

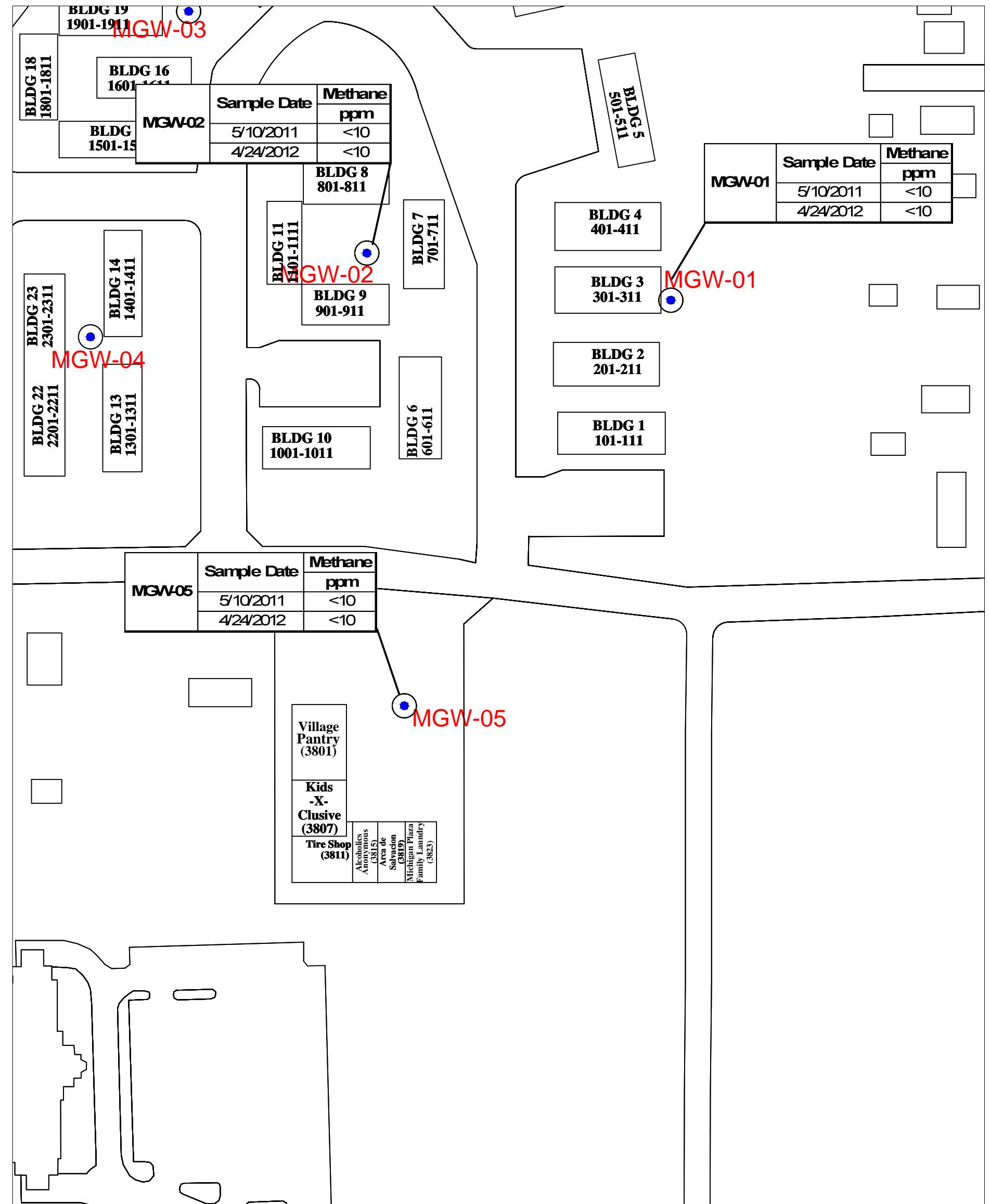
# MUNDELL & ASSOCIATES, INC.

*Consulting Professionals for the Earth & Environment*  
110 South Downey Avenue  
Indianapolis, Indiana 46219-6406

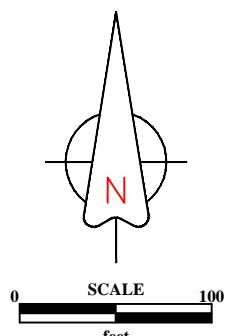
Project Number:  
M01046  
Drawing File:  
Base Map.SKF  
Date Prepared:  
9/21/10  
Scale:  
1"=200'±

**Shallow Potentiometric Surface Map**  
**July 20, 2010**  
Michigan Plaza  
3801-3823 West Michigan Street  
Indianapolis, Indiana

# FIGURE 17



### LEGEND



## **ATTACHMENT 1**

### **1<sup>st</sup> Quarter 2013 Groundwater Monitoring Results**

**Table 2**  
 Monitoring Well Groundwater Analytical Results  
 Quarter 1 - 2013  
 Michigan Plaza  
 3801-3823 West Michigan Street  
 Indianapolis, Indiana  
 MUNDELL Project No.: M01046

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEML RISC Default Industrial Cleanup Level		55	31	1,000	2,000	1,000	4
IDEML RISC Default Residential Cleanup Level		5	5	70	100	80	2
<b>Monitoring Wells (Apts)</b>							
<i>Shallow Wells</i>							
MMW-1S	2/28/2013	477	20.5	6.6	<5.0	<5.0	<2.0
MMW-8S	2/28/2013	6.2	<5.0	9.4	<5.0	<5.0	152
MMW-9S	2/28/2013	11.5	9.2	1,990	48.6	<5.0	843
MMW-10S	2/28/2013	41.8	25.5	294	9.2	<5.0	273
MMW-11S	3/4/2013	<5.0	<5.0	5.2	<5.0	<5.0	<2.0
MMW-12S	3/4/2013	<5.0	<5.0	42.8	<5.0	<5.0	2.3
MMW-15S	3/6/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
<i>Deep Wells</i>							
MMW-4D	3/5/2013	<5.0	<5.0	396	<5.0	<5.0	202
MMW-6D	3/5/2013	<5.0	<5.0	<5.0	<5.0	<5.0	61.1
MMW-11D	3/4/2013	<5.0	<5.0	221	18.9	<5.0	<2.0
MMW-13D	3/4/2013	<5.0	<5.0	374	<5.0	<5.0	21.7
MMW-14D	3/4/2013	<5.0	<5.0	983	16.2	<5.0	96.4
MMW-15D	3/6/2013	<5.0	<5.0	10	<5.0	<5.0	2.7

**Table 2**  
 Monitoring Well Groundwater Analytical Results  
 Quarter 1 - 2013  
 Michigan Plaza  
 3801-3823 West Michigan Street  
 Indianapolis, Indiana  
 MUNDELL Project No.: M01046

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEML RISC Default Industrial Cleanup Level		55	31	1,000	2,000	1,000	4
IDEML RISC Default Residential Cleanup Level		5	5	70	100	80	2
<b>Monitoring Wells (Plaza)</b>							
<i>Shallow Wells</i>							
MMW-P-01	3/4/2013	24.4	12.4	527	12.9	<5.0	2,810
MMW-P-02	3/4/2013	<5.0	<5.0	52.5	<5.0	<5.0	347
MMW-P-03S	3/4/2013	<5.0	<5.0	49.4	<5.0	<5.0	124
MMW-P-04	3/9/2013	28.2	<5.0	50.1	<5.0	<5.0	6.1
MMW-P-05	3/4/2013	<5.0	<5.0	<5.0	<5.0	<5.0	173
MMW-P-06	3/4/2013	<50.0	<50.0	2,230	<50.0	<50.0	5,010
MMW-P-07	3/4/2013	<5.0	<5.0	23.9	<5.0	<5.0	386
MMW-P-08	3/4/2013	<5.0	<5.0	111	<5.0	<5.0	934
MMW-P-09S	3/5/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MMW-P-10S	2/28/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MMW-P-12S	3/9/2013	<5.0	<5.0	505	18.0	<5.0	63.0
<i>Deep Wells</i>							
MMW-P-03D	3/4/2013	<5.0	<5.0	<5.0	<5.0	<5.0	51.7
MMW-P-09D	3/5/2013	<5.0	<5.0	<5.0	<5.0	<5.0	96.4
MMW-P-10D	2/28/2013	<5.0	<5.0	8.9	<5.0	<5.0	181
MMW-P-12D	3/9/2013	<5.0	<5.0	619	20.6	<5.0	71.4

**Table 2**  
 Monitoring Well Groundwater Analytical Results  
 Quarter 1 - 2013  
 Michigan Plaza  
 3801-3823 West Michigan Street  
 Indianapolis, Indiana  
 MUNDELL Project No.: M01046

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEML RISC Default Industrial Cleanup Level		55	31	1,000	2,000	1,000	4
IDEML RISC Default Residential Cleanup Level		5	5	70	100	80	2
<b>Floral Park Monitoring Wells (Off-site)</b>							
<i>Shallow Wells</i>							
MMW-C-01	3/5/2013	17.5	<5.0	<5.0	<5.0	<5.0	10.1
MMW-C-02S	3/5/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MMW-C-16S	3/6/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MMW-P-11S	3/6/2013	703	<5.0	<5.0	<5.0	<5.0	18.8
MMW-P-13S	3/7/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MMW-P-14S	3/7/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
<i>Deep Wells</i>							
MMW-C-02D	3/7/2013	<5.0	<5.0	<5.0	<5.0	<5.0	162
MMW-C-16D	3/6/2013	<5.0	<5.0	<5.0	<5.0	<5.0	316
MMW-C-17D	3/7/2013	<5.0	<5.0	<5.0	<5.0	<5.0	2.1
MMW-P-11DR	3/6/2013	<5.0	<5.0	10.6	<5.0	<5.0	201
MMW-P-13D	3/7/2013	<5.0	<5.0	<5.0	<5.0	<5.0	140
MMW-P-14D	3/7/2013	<5.0	<5.0	<5.0	<5.0	<5.0	32.3

**Table 2**  
 Monitoring Well Groundwater Analytical Results  
 Quarter 1 - 2013  
 Michigan Plaza  
 3801-3823 West Michigan Street  
 Indianapolis, Indiana  
 MUNDELL Project No.: M01046

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEML RISC Default Industrial Cleanup Level		55	31	1,000	2,000	1,000	4
IDEML RISC Default Residential Cleanup Level		5	5	70	100	80	2
<b>Keramida/ENVIRON Monitoring Wells (Off-Site)</b>							
<i>Shallow Wells</i>							
MW-167S	3/8/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MW-168S	3/8/2013	76.0	11.7	75.7	<5.0	<5.0	57.1
MW-170S	3/8/2013	<5.0	<5.0	7.9	<5.0	<5.0	<2.0
<i>Deep Wells</i>							
MW-167D	3/8/2013	<5.0	<5.0	382	19.1	<5.0	13.5
MW-168D	3/8/2013	<5.0	<5.0	<5.0	<5.0	<5.0	80.5
MW-170D	3/8/2013	<5.0	<5.0	<5.0	<5.0	<5.0	76.9

Notes:

Exceedances of IDEM RISC Industrial Default Cleanup Level in **RED**

Exceedances of IDEM RISC Residential Default Cleanup Level in **BLUE**

PCE = Tetrachloroethene; TCE = Trichloroethene; cis-1,2-DCE = cis-1,2-Dichloroethene; trans-1,2-DCE = trans-1,2-Dichloroethene

NS = Not Sampled

NA = Not Analyzed

All analytical results presented in micrograms per liter (ug/L).

**Table 3**  
**Cumulative Monitoring Well Groundwater Analytical Results**  
**Quarter 1 - 2013**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**  
**MUNDELL Project No.: M01046**

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
<b>Monitoring Wells (Apts)</b>							
<i>Shallow Wells</i>							
MMW-1S	9/10/2004	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	4.1
	3/15/2005	150	10.0	< 5.0	< 5.0	< 5.0	< 2.0
	11/9/2005	130	8.3	<5.0	<5.0	<5.0	8.9
	9/5/2006	200	13.0	<5.0	<5.0	<5.0	4.6
	2/22/2007	220	14.9	<5.0	<5.0	<5.0	<2.0
	6/14/2007	240	<5.0	<5.0	<5.0	<5.0	<2.0
	9/19/2007	362	10.5	<5.0	<5.0	31.6	<2.0
	12/13/2007	330	8.1	<5.0	<5.0	27.0	<2.0
	3/21/2008	280	14.0	<5.0	<5.0	<5.0	<2.0
	6/6/2008	277	13.2	<5.0	<5.0	<5.0	<2.0
	9/11/2008	288	14.7	<5.0	<5.0	<5.0	<2.0
	11/20/2008	223	45.5	169	<5.0	<5.0	14.5
	3/16/2009	199	11.3	<5.0	<5.0	<5.0	<2.0
	6/16/2009	237	13.4	<5.0	<5.0	<5.0	<2.0
	8/5/2009	195	22.9	71.3	<5.0	<5.0	9.3
	11/2/2009	189	39.0	119	<5.0	<5.0	26.6
	2/3/2010	160	49.7	59.1	<5.0	<5.0	35.4
	4/22/2010	206	14.7	<5.0	<5.0	<5.0	<2.0
	7/21/2010	310	21.8	<5.0	<5.0	<5.0	<2.0
	10/12/2010	89.4	21.3	208	<5.0	<5.0	32.2
	1/19/2011	217	46.2	35.4	<5.0	<5.0	21.8
	5/4/2011	449	22.7	12.1	<5.0	<5.0	<2.0
	7/28/2011	334	20.3	8.1	<5.0	<5.0	2.1
	10/19/2011	136	66.0	75.3	<5.0	<5.0	14.3
	2/14/2012	219	9.7	<5.0	<5.0	<5.0	<2.0
	4/25/2012	270	11.2	34.2	<5.0	<5.0	39.0
	8/2/2012	292	27.9	<5.0	<5.0	<5.0	28.5
	11/15/2012	413	20.0	5.1	<5.0	<5.0	<2.0
	2/28/2013	477	20.5	6.6	<5.0	<5.0	<2.0
MMW-2S	9/10/2004	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	11/9/2005	<5.0	<5.0	<5.0	<5.0	<5.0	5.2
	9/5/2006	<5.0	<5.0	<5.0	<5.0	<5.0	5.2
	2/22/2007	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/2/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/15/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/22/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/30/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/23/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MMW-3S	8/26/2004	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	9/10/2004	<5.0	5.2	<5.0	<5.0	<5.0	<2.0
	11/9/2005	<5.0	28.0	5.4	<5.0	<5.0	<2.0
	9/5/2006	<5.0	23.0	7.4	<5.0	<5.0	<2.0
	2/22/2007	<5.0	20.6	8.5	<5.0	<5.0	<2.0
	6/2/2008	<5.0	20.2	7.9	<5.0	<5.0	2.8
	6/15/2009	<5.0	15.3	11.7	<5.0	<5.0	3.0
	4/20/2010	<5.0	15.9	8.0	<5.0	<5.0	<2.0
	5/4/2011	<5.0	12.4	12.4	<5.0	<5.0	4.4
	4/23/2012	<5.0	9.9	5.8	<5.0	<5.0	<2.0
MMW-7S	8/24/2004	<5.0	<5.0	28.0	<5.0	<5.0	<2.0
	9/10/2004	<5.0	<5.0	8.5	<5.0	<5.0	<2.0
	11/9/2005	<5.0	<5.0	9.5	<5.0	<5.0	<2.0
	9/5/2006	<5.0	<5.0	5.8	<5.0	<5.0	4.5
	2/21/2007	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/2/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/15/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/20/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	5/4/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0

**Table 3**  
 Cumulative Monitoring Well Groundwater Analytical Results  
 Quarter 1 - 2013  
 Michigan Plaza  
 3801-3823 West Michigan Street  
 Indianapolis, Indiana  
 MUNDELL Project No.: M01046

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
MMW-8S	2/22/2007	114	<5.0	289	13.8	<5.0	40.6
	6/14/2007	15.9	<5.0	364	9.5	<5.0	82.1
	9/19/2007	<5.0	<5.0	778	24.6	<5.0	145
	12/13/2007	7.7	<5.0	1,000	7.4	<5.0	586
	3/20/2008	<5.0	<5.0	470	<5.0	<5.0	330
	6/6/2008	<5.0	<5.0	336	<5.0	<5.0	509
	9/10/2008	<5.0	<5.0	275	<5.0	<5.0	322
	11/20/2008	<5.0	<5.0	123	<5.0	<5.0	584
	3/16/2009	<5.0	<5.0	95.0	<5.0	<5.0	348
	6/16/2009	<5.0	<5.0	94.3	6.1	<5.0	280
	8/5/2009	<5.0	<5.0	83.8	<5.0	<5.0	261
	11/2/2009	<5.0	<5.0	58.3	<5.0	<5.0	277
	2/3/2010	7.9	<5.0	15.3	<5.0	<5.0	236
	4/22/2010	<5.0	<5.0	9.0	<5.0	<5.0	151
	7/21/2010	6.2	<5.0	14.9	<5.0	5.0	230
	10/12/2010	8.4	<5.0	5.4	<5.0	<5.0	158
	1/19/2011	14.1	<5.0	<5.0	<5.0	<5.0	172
	4/30/2011	677	19.5	37.2	<5.0	<5.0	108
	7/28/2011	19.4	<5.0	29.0	<5.0	<5.0	130
	10/24/2011	7.9	<5.0	9.9	<5.0	<5.0	200
	2/14/2012	<5.0	<5.0	12.6	<5.0	<5.0	148
	4/25/2012	<5.0	<5.0	15.6	<5.0	<5.0	90.6
	8/2/2012	5.1	<5.0	8.5	<5.0	<5.0	139
	11/15/2012	6.8	<5.0	10.0	<5.0	<5.0	127
	2/28/2013	6.2	<5.0	9.4	<5.0	<5.0	152
MMW-9S	2/22/2007	782	88.6	78.9	<5.0	<5.0	<2.0
	6/14/2007	858	85.7	65.3	<5.0	<5.0	<2.0
	9/20/2007	1,430	112	70.3	8.2	<5.0	<2.0
	12/12/2007	<50.0	<50.0	1,700	<50.0	<50.0	<20.0
	3/21/2008	57.0	20.0	2,900	39.0	<5.0	16.0
	6/6/2008	52.9	28.0	1,540	38.2	<5.0	295
	9/10/2008	52.6	22.7	4,920	94.5	<5.0	167
	11/20/2008	<5.0	<5.0	5,820	90.2	<5.0	1,010
	3/16/2009	<50.0	<50.0	7,490	73.8	<50.0	1,800
	6/16/2009	44.5	24.9	4,810	64.0	<5.0	876
	8/5/2009	<5.0	<5.0	5,010	64.2	<5.0	1,110
	11/2/2009	<5.0	<5.0	5,410	120	<5.0	1,050
	2/3/2010	<50.0	<50.0	5,090	98.4	<50.0	1,700
	4/22/2010	<5.0	<5.0	4,300	77.1	<5.0	1,710
	7/21/2010	<50.0	<50.0	2,910	73.2	<50.0	2,020
	10/12/2010	<50.0	<50.0	2,430	<50.0	<50.0	1,270
	1/19/2011	<50.0	<50.0	1,580	136	<50.0	1,490
	5/4/2011	11.1	13.4	2,900	71.7	<5.0	1,350
	7/27/2011	<5.0	<5.0	933	32.0	<5.0	747
	10/24/2011	<5.0	<5.0	2,330	92.8	<5.0	694
	2/14/2012	<25.0	<25.0	2,040	60.8	<25.0	1,140
	4/25/2012	<5.0	<5.0	1,180	30.1	<5.0	753
	8/2/2012	<5.0	<5.0	667	30.2	<5.0	667
	11/14/2012	9.8	5.0	2,000	58.0	<5.0	893
	2/28/2013	11.5	9.2	1,990	48.6	<5.0	843

**Table 3**  
**Cumulative Monitoring Well Groundwater Analytical Results**  
**Quarter 1 - 2013**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**  
**MUNDELL Project No.: M01046**

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
MMW-10S	2/22/2007	49.6	<5.0	<5.0	<5.0	<5.0	<2.0
	6/14/2007	77.6	<5.0	<5.0	<5.0	<5.0	<2.0
	9/19/2007	66.0	<5.0	<5.0	<5.0	<5.0	<2.0
	12/12/2007	124	56.0	149	<5.0	<5.0	<2.0
	3/21/2008	440	12.0	8.1	<5.0	<5.0	12.0
	6/6/2008	541	62.1	218	<5.0	<5.0	30.4
	9/10/2008	6.9	<5.0	353	8.2	<5.0	<2.0
	11/20/2008	<5.0	<5.0	212	<5.0	<5.0	15.9
	3/16/2009	<5.0	<5.0	302	<5.0	<5.0	114
	6/16/2009	22.8	15.4	415	12.0	<5.0	81.4
	8/5/2009	<5.0	<5.0	224	5.5	<5.0	156
	11/2/2009	12.8	10.1	239	5.6	<5.0	119
	2/3/2010	8.3	7.5	180	5.1	<5.0	148
	4/22/2010	<5.0	7.9	165	<5.0	<5.0	143
	7/21/2010	15.6	9.7	267	8.3	<5.0	239
	10/12/2010	<5.0	<5.0	100	<5.0	<5.0	96.1
	1/19/2011	<5.0	14.4	80.9	12.7	<5.0	88.0
	5/4/2011	429	76.6	464	16.9	<5.0	130
	7/27/2011	24.5	14.3	206	7.2	<5.0	295
	10/19/2011	5.2	<5.0	134	<5.0	<5.0	198
	2/14/2012	35.0	21.6	357	6.7	<5.0	265
	4/24/2012	54.0	23.8	194	6.1	<5.0	196
	8/2/2012	<5.0	<5.0	111	<5.0	<5.0	256
	11/15/2012	23.0	21.7	309	13.2	<5.0	286
	2/28/2013	41.8	25.5	294	9.2	<5.0	273
MMW-11S	6/14/2007	<5.0	<5.0	225	6.8	<5.0	18.6
	9/19/2007	<5.0	<5.0	442	21.1	<5.0	30.1
	12/13/2007	7.2	<5.0	920	27.0	<5.0	49.0
	3/20/2008	<5.0	<5.0	420	17.0	<5.0	4.9
	6/5/2008	<5.0	<5.0	623	23.1	<5.0	26.7
	9/10/2008	<5.0	<5.0	327	18.3	<5.0	9.9
	11/20/2008	<5.0	<5.0	554	23.9	<5.0	18.5
	3/16/2009	<5.0	<5.0	37.6	<5.0	<5.0	<2.0
	6/16/2009	<5.0	<5.0	253	17.9	<5.0	2.8
	8/5/2009	<5.0	<5.0	80.7	5.5	<5.0	3.1
	11/2/2009	<5.0	<5.0	59.9	<5.0	<5.0	<2.0
	2/3/2010	<5.0	<5.0	29.4	<5.0	<5.0	<2.0
	4/22/2010	<5.0	<5.0	17.7	<5.0	<5.0	<2.0
	7/21/2010	<5.0	<5.0	120	7.4	<5.0	4.3
	10/12/2010	<5.0	<5.0	85.1	5.6	<5.0	<2.0
	1/19/2011	<5.0	<5.0	46.3	12.9	<5.0	<2.0
	4/30/2011	<5.0	<5.0	8.3	<5.0	<5.0	<2.0
	7/26/2011	<5.0	<5.0	15.1	<5.0	<5.0	<2.0
	10/21/2011	<5.0	<5.0	33.9	<5.0	<5.0	<2.0
	2/14/2012	<5.0	<5.0	5.4	<5.0	<5.0	<2.0
	4/24/2012	<5.0	<5.0	42.5	5.1	<5.0	<2.0
	7/31/2012	<5.0	<5.0	62.7	5.4	<5.0	<2.0
	11/13/2012	<5.0	<5.0	27.6	<5.0	<5.0	<2.0
	3/4/2013	<5.0	<5.0	5.2	<5.0	<5.0	<2.0
MMW-12S	6/16/2009	<5.0	<5.0	9.7	<5.0	<5.0	6.5
	8/5/2009	<5.0	<5.0	47.3	<5.0	<5.0	15.2
	11/2/2009	<5.0	<5.0	28.8	<5.0	<5.0	7.1
	2/3/2010	<5.0	<5.0	11.4	<5.0	<5.0	2.1
	4/20/2010	<5.0	<5.0	5.3	<5.0	<5.0	<2.0
	7/21/2010	<5.0	<5.0	25.4	<5.0	<5.0	7.3
	10/12/2010	<5.0	<5.0	16.8	<5.0	<5.0	<2.0
	1/18/2011	<5.0	<5.0	19.7	<5.0	<5.0	<2.0
	4/30/2011	<5.0	<5.0	30.6	<5.0	<5.0	2.7
	7/26/2011	<5.0	<5.0	24.3	<5.0	<5.0	<2.0
	10/18/2011	<5.0	<5.0	39.4	<5.0	<5.0	<2.0
	2/14/2012	<5.0	<5.0	24.0	<5.0	<5.0	<2.0
	4/23/2012	<5.0	<5.0	45.2	<5.0	<5.0	2.6
	7/31/2012	<5.0	<5.0	46.9	<5.0	<5.0	3.0
	11/13/2012	<5.0	<5.0	84.3	<5.0	<5.0	5.3
	3/4/2013	<5.0	<5.0	42.8	<5.0	<5.0	2.3

**Table 3**  
**Cumulative Monitoring Well Groundwater Analytical Results**  
**Quarter 1 - 2013**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**  
**MUNDELL Project No.: M01046**

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
MMW-15S	2/15/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2012	<5.0	<5.0	11.2	<5.0	<5.0	<2.0
	8/6/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	11/21/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	3/6/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
<i>Deep Wells</i>							
MMW-4D	8/25/2004	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	9/10/2004	<5.0	<5.0	980	<5.0	<5.0	200
	11/10/2005	<5.0	<5.0	850	<5.0	<5.0	240
	9/5/2006	<5.0	<5.0	1,100	<5.0	<5.0	220
	2/22/2007	<5.0	<5.0	1,460	<5.0	<5.0	248
	6/2/2008	<5.0	<5.0	515	<5.0	<5.0	32.2
	6/15/2009	<5.0	<5.0	892	7.0	<5.0	142
	4/20/2010	<5.0	<5.0	719	<5.0	<5.0	237
	4/29/2011	<5.0	<5.0	1,050	<5.0	<5.0	164
	2/14/2012	<5.0	<5.0	639	<5.0	<5.0	237
	4/23/2012	<5.0	<5.0	338	<5.0	<5.0	176
	7/31/2012	<5.0	<5.0	347	<5.0	<5.0	129
	11/13/2012	<5.0	<5.0	463	<5.0	<5.0	164
	3/5/2013	<5.0	<5.0	396	<5.0	<5.0	202
MMW-5D	8/24/2004	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	9/10/2004	<5.0	<5.0	3,400	13.0	<5.0	270
	11/10/2005	<5.0	<5.0	3,900	19.0	<5.0	140
	9/5/2006	<50.0	<50	2,500	<50	<5.0	170
	2/22/2007	<50.0	<50	3,970	<50	<5.0	359
	6/2/2008	<5.0	<5.0	1,360	19.9	<5.0	207
	6/15/2009	<5.0	<5.0	1,110	14.5	<5.0	242
	4/20/2010	<5.0	<5.0	943	<5.0	<5.0	204
	4/29/2011	<5.0	<5.0	659	<5.0	<5.0	166
	4/23/2012	<5.0	<5.0	228	<5.0	<5.0	126
MMW-6D	9/10/2004	<5.0	<5.0	540	<5.0	<5.0	400
	11/10/2005	<5.0	<5.0	750	<5.0	<5.0	700
	9/5/2006	<5.0	<5.0	300	<5.0	<5.0	440
	2/21/2007	<5.0	<5.0	171	<5.0	<5.0	282
	6/2/2008	<5.0	<5.0	65.5	<5.0	<5.0	242
	6/15/2009	<5.0	<5.0	8.6	<5.0	<5.0	111
	4/20/2010	<5.0	<5.0	8.2	<5.0	<5.0	63.6
	4/29/2011	<5.0	<5.0	<5.0	<5.0	<5.0	51.1
	2/14/2012	<5.0	<5.0	<5.0	<5.0	<5.0	43.9
	4/23/2012	<5.0	<5.0	<5.0	<5.0	<5.0	38.5
	7/31/2012	<5.0	<5.0	<5.0	<5.0	<5.0	38.1
	11/13/2012	<5.0	<5.0	<5.0	<5.0	<5.0	57.5
	3/5/2013	<5.0	<5.0	<5.0	<5.0	<5.0	61.1
MMW-11D	6/16/2009	<5.0	<5.0	25.3	6.7	<5.0	<2.0
	8/5/2009	<5.0	<5.0	485	22.6	<5.0	15.3
	11/2/2009	<5.0	<5.0	771	31.8	<5.0	18.8
	2/3/2010	<5.0	<5.0	301	28.2	<5.0	5.2
	4/22/2010	<5.0	<5.0	307	21.8	<5.0	2.6
	7/21/2010	<5.0	<5.0	396	21.8	<5.0	10.9
	10/12/2010	<5.0	<5.0	162	<5.0	<5.0	<2.0
	1/19/2011	<5.0	<5.0	570	26.7	<5.0	5.9
	4/30/2011	<5.0	<5.0	356	17.2	<5.0	3.6
	7/26/2011	<5.0	<5.0	304	18.3	<5.0	3.6
	10/21/2011	<5.0	<5.0	751	22.7	<5.0	11.8
	2/14/2012	<5.0	<5.0	240	19.0	<5.0	<2.0
	4/24/2012	<5.0	<5.0	186	13.0	<5.0	<2.0
	7/31/2012	<5.0	<5.0	310	20.3	<5.0	3.2
	11/13/2012	<5.0	<5.0	309	14.6	<5.0	2.9
	3/4/2013	<5.0	<5.0	221	18.9	<5.0	<2.0

**Table 3**  
 Cumulative Monitoring Well Groundwater Analytical Results  
 Quarter 1 - 2013  
 Michigan Plaza  
 3801-3823 West Michigan Street  
 Indianapolis, Indiana  
 MUNDELL Project No.: M01046

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
MMW-13D	8/5/2009	<5.0	<5.0	672	<5.0	<5.0	59.2
	11/2/2009	<5.0	<5.0	949	<5.0	<5.0	182
	2/3/2010	<5.0	<5.0	819	6.2	<5.0	260
	4/22/2010	<5.0	<5.0	469	<5.0	<5.0	4.6
	7/21/2010	<5.0	<5.0	432	<5.0	<5.0	16.6
	10/12/2010	<5.0	<5.0	1,200	<5.0	<5.0	187
	1/19/2011	<5.0	<5.0	920	12.3	<5.0	179
	4/30/2011	<5.0	<5.0	527	<5.0	<5.0	15.4
	7/26/2011	<5.0	<5.0	328	<5.0	<5.0	11.9
	10/18/2011	<5.0	<5.0	771	5.2	<5.0	140
	2/14/2012	<5.0	<5.0	331	<5.0	<5.0	9.9
	4/24/2012	<5.0	<5.0	422	<5.0	<5.0	46.7
	7/31/2012	<5.0	<5.0	684	<5.0	<5.0	147
	11/13/2012	<5.0	<5.0	765	<5.0	<5.0	135
MMW-14D	3/4/2013	<5.0	<5.0	374	<5.0	<5.0	21.7
	MMW-13D Low	6/16/2009	<5.0	613	10.4	<5.0	17.3
	MMW-13D Medium (29')	6/16/2009	<5.0	578	12.1	<5.0	14.9
	MMW-13D High (17')	6/16/2009	<5.0	597	9.7	<5.0	21.1
	6/16/2009	<5.0	<5.0	648	15.6	<5.0	57.6
	8/5/2009	<5.0	<5.0	589	10.9	<5.0	79.1
	11/2/2009	<5.0	<5.0	541	9.2	<5.0	83.8
	2/3/2010	<5.0	<5.0	871	13.9	<5.0	84.9
	4/20/2010	<5.0	<5.0	763	14.1	<5.0	72.8
	7/21/2010	<5.0	<5.0	805	14.6	<5.0	60.8
	10/12/2010	<5.0	<5.0	775	8.4	<5.0	83.3
	1/18/2011	<5.0	<5.0	785	24.0	<5.0	109
	4/30/2011	<5.0	<5.0	1,070	14.7	<5.0	68.3
	7/26/2011	<5.0	<5.0	875	15.3	<5.0	81.0
	10/19/2011	<5.0	<5.0	898	11.1	<5.0	92.6
MMW-15D	2/14/2012	<5.0	<5.0	1080	17.4	<5.0	89.7
	4/23/2012	<5.0	<5.0	996	11.0	<5.0	79.6
	7/31/2012	<5.0	<5.0	795	13.5	<5.0	95.1
	11/13/2012	<5.0	<5.0	1010	10.0	<5.0	105
	3/4/2013	<5.0	<5.0	983	16.2	<5.0	96.4
	2/15/2012	<5.0	<5.0	7.3	<5.0	<5.0	<2.0
	4/26/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	8/6/2012	<5.0	<5.0	11.6	<5.0	<5.0	3.1
	11/21/2012	<5.0	<5.0	10.6	<5.0	<5.0	<2.0
	3/6/2013	<5.0	<5.0	10	<5.0	<5.0	2.7

**Table 3**  
**Cumulative Monitoring Well Groundwater Analytical Results**  
**Quarter 1 - 2013**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**  
**MUNDELL Project No.: M01046**

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
<b>Monitoring Wells (Plaza)</b>							
Shallow Wells							
MMW-P-01	11/9/2005	33	210	160	9.6	<5.0	76.0
	2/22/2007	85.2	356	274	16.7	<5.0	28.7
	6/14/2007	111	368	350	10.0	<5.0	79.6
	9/20/2007	206	322	300	11.5	<5.0	127
	12/14/2007	230	320	240	7.1	<5.0	87.0
	3/21/2008	120	170	3,100	25.0	<5.0	42.0
	6/5/2008	22.0	31.5	3,660	68.6	<5.0	123
	9/11/2008	14.2	15.1	1,690	<5.0	<5.0	87.7
	11/19/2008	<5.0	<5.0	4,320	<5.0	<5.0	116
	3/17/2009	17.5	22.6	12,300	143	<5.0	3,290
	6/17/2009	<50.0	<50.0	4,020	63.9	<50.0	1,840
	8/6/2009	97.4	<50.0	12,200	<50.0	<50.0	3,730
	11/3/2009	103	58.3	9,330	<50.0	<50.0	4,770
	2/4/2010	104	60.6	9,190	130	<50.0	13,600
	4/22/2010	90.5	79.0	9,400	94.7	<50.0	12,600
	7/7/2010	<50.0	<50.0	1,880	<50.0	<50.0	2,960
	10/14/2010	<125	<125	4,760	<125	<125	5,440
	1/20/2011	153	140	1,960	<50.0	<50.0	11,100
	5/5/2011	8.4	26.8	281	<5.0	<5.0	232
	7/28/2011	5.7	6.0	734	<5.0	<5.0	1,070
	10/24/2011	23.4	10.0	839	9.10	<5.0	1,410
	2/13/2012	15.0	<5.0	438	<5.0	<5.0	2,270
	4/25/2012	21.8	11.0	459	8.1	<5.0	1,720
	8/2/2012	12.0	8.0	377	<5.0	<5.0	1,680
	11/14/2012	24.5	13.1	619	14.1	<5.0	3,060
	3/4/2013	24.4	12.4	527	12.9	<5.0	2,810
MMW-P-02	11/8/2005	24.0	<5.0	87.0	7.3	<5.0	49.0
	2/22/2007	184	<5.0	39.4	<5.0	<5.0	27.4
	6/14/2007	17.1	<5.0	35.0	<5.0	<5.0	27.5
	9/19/2007	13.3	<5.0	66.3	5.6	<5.0	50.1
	12/13/2007	7.8	<5.0	69.0	<5.0	<5.0	53.0
	3/20/2008	19.0	<5.0	67.0	<5.0	<5.0	42.0
	6/5/2008	94.9	<5.0	44.0	<5.0	<5.0	46.4
	9/11/2008	17.5	<5.0	46.6	<5.0	<5.0	42.0
	11/19/2008	10.7	<5.0	75.4	<5.0	<5.0	69.5
	3/17/2009	23.4	<5.0	65.4	5.3	<5.0	68.4
	6/17/2009	5.1	<5.0	54.2	9.2	<5.0	80.6
	8/6/2009	5.1	<5.0	55.8	<5.0	<5.0	56.2
	11/3/2009	11.1	<5.0	60.1	<5.0	<5.0	73.9
	2/4/2010	7.4	<5.0	75.8	5.8	<5.0	104
	4/22/2010	9.9	6.8	56.0	8.0	<5.0	110
	7/21/2010	24.0	<5.0	72.4	<5.0	<5.0	161
	10/13/2010	9.3	<5.0	61.0	<5.0	<5.0	95.0
	1/19/2011	15.9	<5.0	64.3	14.0	<5.0	396
	5/4/2011	9.2	<5.0	56.5	<5.0	<5.0	386
	7/27/2011	<5.0	<5.0	42.9	<5.0	<5.0	218
	10/19/2011	9.1	<5.0	36.9	<5.0	<5.0	304
	2/13/2012	<5.0	<5.0	120.0	<5.0	<5.0	479
	4/25/2012	<5.0	<5.0	53.4	<5.0	<5.0	274
	8/1/2012	6.4	<5.0	34.2	<5.0	<5.0	257
	11/14/2012	6.7	<5.0	54.0	<5.0	<5.0	803
	3/4/2013	<5.0	<5.0	52.5	<5.0	<5.0	347

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**Michigan Plaza**  
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Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEML RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEML RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
MMW-P-03S	11/9/2005	110	<5.0	97.0	9.6	<5.0	<2.0
	2/22/2007	397	<5.0	105	10.0	<5.0	<2.0
	6/14/2007	256	<5.0	96.4	9.2	<5.0	9.3
	9/20/2007	144	<5.0	131	15.8	<5.0	16.0
	12/13/2007	67.0	<5.0	88.0	5.3	<5.0	15.0
	3/20/2008	130	<5.0	84.0	7.3	<5.0	10.0
	6/5/2008	19.4	<5.0	380	14.9	<5.0	10.6
	9/11/2008	<5.0	<5.0	<5.0	<5.0	<5.0	72.6
	11/19/2008	<5.0	6.0	494	<5.0	<5.0	40.8
	3/17/2009	7.5	<5.0	904	38.7	<5.0	283
	6/17/2009	<5.0	<5.0	332	22.3	<5.0	759
	8/6/2009	30.6	8.2	573	25.0	<5.0	843
	11/3/2009	<5.0	<5.0	141	16.1	<5.0	379
	2/4/2010	<5.0	<5.0	155	19.4	<5.0	382
	4/22/2010	14.2	8.9	156	13.4	<5.0	377
	7/21/2010	<5.0	<5.0	<5.0	<5.0	<5.0	141
	10/13/2010	<5.0	<5.0	70.9	9.2	<5.0	542
	1/19/2011	<5.0	<5.0	79.7	19.4	<5.0	338
	5/4/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	7/27/2011	<5.0	<5.0	29.3	<5.0	<5.0	245
	10/19/2011	<5.0	<5.0	33.5	6.6	<5.0	446
	2/13/2012	<5.0	<5.0	48.0	<5.0	<5.0	221
	4/25/2012	<5.0	<5.0	18.4	<5.0	<5.0	257
	8/1/2012	<5.0	<5.0	16.1	<5.0	<5.0	294
	11/14/2012	<5.0	<5.0	12.3	<5.0	<5.0	113
	3/4/2013	<5.0	<5.0	49.4	<5.0	<5.0	124
MMW-P-04	11/9/2005	180	<5.0	<5.0	<5.0	<5.0	<2.0
	2/22/2007	315	<5.0	<5.0	<5.0	<5.0	<2.0
	6/14/2007	268	<5.0	<5.0	<5.0	<5.0	<2.0
	9/20/2007	214	<5.0	<5.0	<5.0	<5.0	<2.0
	12/13/2007	62.0	<5.0	<5.0	<5.0	<5.0	<2.0
	3/20/2008	120	<5.0	<5.0	<5.0	<5.0	<2.0
	6/6/2008	154	6.0	59.7	<5.0	<5.0	<2.0
	9/11/2008	31.9	<5.0	360	7.1	<5.0	<2.0
	11/19/2008	45.0	<5.0	248	<5.0	<5.0	<2.0
	3/18/2009	19.4	5.4	304	10.8	<5.0	<2.0
	6/17/2009	35.3	5.4	827	22.0	<5.0	2.0
	8/6/2009	<5.0	<5.0	15.1	<5.0	<5.0	<2.0
	11/5/2009	<5.0	<5.0	1,190	36.9	<5.0	90.9
	2/12/2010	<5.0	<5.0	144	8.3	<5.0	224
	4/21/2010	<5.0	<5.0	268	15.8	<5.0	364
	7/22/2010	<5.0	<5.0	189	12.9	<5.0	402
	10/13/2010	<5.0	<5.0	10.3	<5.0	<5.0	16.8
	2/18/2011	<5.0	<5.0	6.4	<5.0	<5.0	36.3
	5/5/2011	144	<5.0	76.2	<5.0	<5.0	124
	7/28/2011	<5.0	<5.0	30.6	<5.0	<5.0	78.8
	10/24/2011	<5.0	<5.0	14.8	<5.0	<5.0	68.7
	2/16/2012	<5.0	<5.0	6.9	<5.0	<5.0	16.1
	5/1/2012	<5.0	<5.0	<5.0	<5.0	<5.0	5.7
	8/10/2012	<5.0	<5.0	5.8	<5.0	<5.0	2.7
	11/21/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	3/9/2013	28.2	<5.0	50.1	<5.0	<5.0	6.1

**Table 3**  
 Cumulative Monitoring Well Groundwater Analytical Results  
 Quarter 1 - 2013  
 Michigan Plaza  
 3801-3823 West Michigan Street  
 Indianapolis, Indiana  
 MUNDELL Project No.: M01046

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
MMW-P-05	11/8/2005	<5.0	<5.0	6.2	<5.0	<5.0	<2.0
	2/22/2007	23.7	<5.0	9.1	<5.0	<5.0	<2.0
	6/14/2007	<5.0	<5.0	18.8	<5.0	<5.0	<2.0
	9/19/2007	<5.0	<5.0	18.8	<5.0	<5.0	<2.0
	12/14/2007	<5.0	<5.0	14.8	<5.0	<5.0	<2.0
	3/20/2008	<5.0	<5.0	8.1	<5.0	<5.0	<2.0
	6/5/2008	<5.0	<5.0	15.6	<5.0	<5.0	<2.0
	9/11/2008	<5.0	<5.0	16.7	<5.0	<5.0	<2.0
	11/19/2008	<5.0	<5.0	22.1	<5.0	<5.0	<2.0
	3/17/2009	<5.0	<5.0	13.7	<5.0	<5.0	<2.0
	6/17/2009	<5.0	<5.0	10.9	6.6	<5.0	<2.0
	8/6/2009	<5.0	<5.0	15.1	<5.0	<5.0	<2.0
	11/3/2009	<5.0	<5.0	7.6	<5.0	<5.0	2.7
	2/4/2010	<5.0	<5.0	6.8	<5.0	<5.0	<2.0
	4/22/2010	<5.0	<5.0	8.6	<5.0	<5.0	<2.0
	7/21/2010	<5.0	<5.0	10.4	<5.0	<5.0	5.3
	10/13/2010	<5.0	<5.0	13.6	<5.0	<5.0	3.9
	1/20/2011	<5.0	<5.0	14.1	<5.0	<5.0	<2.0
	4/30/2011	<5.0	<5.0	<5.0	<5.0	<5.0	9.2
	7/27/2011	<5.0	<5.0	10.3	<5.0	<5.0	307
	10/19/2011	<5.0	<5.0	8.3	<5.0	<5.0	48.3
	2/13/2012	<5.0	<5.0	<5.0	<5.0	<5.0	79.4
	4/25/2012	<5.0	<5.0	<5.0	<5.0	<5.0	80.9
	8/2/2012	<5.0	<5.0	<5.0	<5.0	<5.0	157
	11/14/2012	<5.0	<5.0	<5.0	<5.0	<5.0	151
	3/4/2013	<5.0	<5.0	<5.0	<5.0	<5.0	173
MMW-P-06	11/8/2005	<5.0	<5.0	200	24.0	<5.0	21.0
	2/22/2007	<5.0	<5.0	158	19.2	<5.0	<2.0
	6/14/2007	<5.0	<5.0	214	22.7	<5.0	13.3
	9/19/2007	<5.0	<5.0	283	38.2	<5.0	26.1
	12/14/2007	<5.0	<5.0	260	40.0	<5.0	31.0
	3/20/2008	<5.0	<5.0	250	31.0	<5.0	26.0
	6/5/2008	<5.0	<5.0	265	30.9	<5.0	40.1
	9/11/2008	<5.0	<5.0	271	33.3	<5.0	<2.0
	11/19/2008	<5.0	<5.0	292	<5.0	<5.0	61.4
	3/17/2009	<5.0	<5.0	292	35.3	<5.0	<2.0
	6/17/2009	<5.0	<5.0	145	22.2	<5.0	90.6
	8/6/2009	<5.0	<5.0	136	14.3	<5.0	301
	11/3/2009	<5.0	<5.0	107	15.2	<5.0	292
	2/4/2010	<5.0	<5.0	79.1	11.2	<5.0	1,870
	4/22/2010	<5.0	<5.0	23.7	8.0	<5.0	2,470
	7/21/2010	<50.0	<50.0	<50.0	<50.0	<50.0	5,870
	10/14/2010	<100	<100	<100	<100	<100	12,900
	1/20/2011	<100	<100	2,700	<100	<100	15,000
	5/4/2011	<50.0	<50.0	2,850	<50.0	<50.0	14,400
	7/28/2011	<50.0	<50.0	1,670	<50.0	<50.0	15,600
	10/24/2011	<50.0	<50.0	10,100	<50.0	<50.0	11,300
	2/13/2012	<50.0	<50.0	2,800	<50.0	<50.0	10,100
	4/26/2012	<5.0	<5.0	3,220	29.2	<5.0	7,090
	8/2/2012	<5.0	<5.0	6,420	47.0	<5.0	6,510
	11/14/2012	<5.0	<5.0	4,640	<5.0	<5.0	6,170
	3/4/2013	<50.0	<50.0	2,230	<50.0	<50.0	5,010

**Table 3**  
**Cumulative Monitoring Well Groundwater Analytical Results**  
**Quarter 1 - 2013**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**  
**MUNDELL Project No.: M01046**

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
MMW-P-07	2/22/2007	3,060	81.5	82.0	8.8	<5.0	<2.0
	6/14/2007	2,850	90.0	82.5	<50.0	<50.0	<20.0
	9/20/2007	5,200	109	121	16.1	<5.0	2.0
	12/13/2007	1,440	157	930	8.8	7.4	80.0
	3/21/2008	31.0	7.6	1,700	27.0	<5.0	110
	6/5/2008	<5.0	<5.0	938	15.6	<5.0	466
	9/11/2008	<5.0	<5.0	1,870	55.2	<5.0	1,620
	11/19/2008	<5.0	<5.0	797	<5.0	<5.0	749
	3/17/2009	<5.0	<5.0	361	17.7	<5.0	1,830
	6/17/2009	<5.0	<5.0	87.1	9.4	<5.0	1,130
	8/6/2009	<5.0	<5.0	48.7	<5.0	<5.0	787
	11/3/2009	<5.0	<5.0	809	14.1	<5.0	1,510
	2/4/2010	<5.0	<5.0	555	12.4	<5.0	1,880
	4/22/2010	<5.0	7.0	1,050	23.7	<5.0	2,080
	7/22/2010	<5.0	<5.0	247	7.8	<5.0	1,680
	10/14/2010	<25.0	<25.0	665	<25.0	<25.0	2,310
	1/20/2011	<5.0	<5.0	295	13.9	<5.0	562
	5/4/2011	<5.0	<5.0	72.0	<5.0	<5.0	2,170
	7/28/2011	<5.0	<5.0	73.6	<5.0	<5.0	978
	10/24/2011	<5.0	<5.0	37.3	<5.0	<5.0	388
	2/13/2012	<5.0	<5.0	<5.0	<5.0	<5.0	330
	4/25/2012	<5.0	<5.0	11.6	<5.0	<5.0	266
	8/2/2012	<5.0	<5.0	33.7	<5.0	<5.0	405
	11/14/2012	<5.0	<5.0	42.2	<5.0	<5.0	607
	3/4/2013	<5.0	<5.0	23.9	<5.0	<5.0	386
MMW-P-08	2/22/2007	6,280	281	240	26.7	<5.0	<2.0
	6/14/2007	6,440	310	169	<50.0	<50.0	<20.0
	9/20/2007	9,780	494	201	25.3	<5.0	6.5
	12/14/2007	390	210	5,800	<50.0	<50.0	<20.0
	3/21/2008	6.7	11.0	6,500	130	<5.0	55.0
	6/5/2008	<5.0	<5.0	<5.0	<5.0	<5.0	562
	9/11/2008	5.8	5.0	18,300	686	<50.0	4,740
	11/19/2008	<50.0	<50.0	5,690	91.4	<50.0	13,000
	3/17/2009	<5.0	<5.0	1,130	47.1	<5.0	5,680
	6/17/2009	<125	<125	356	145	<5.0	7,200
	8/6/2009	<125	<125	601	<50.0	<50.0	8,960
	11/3/2009	<50.0	<50.0	86.7	<50.0	<50.0	2,860
	2/4/2010	<50.0	<50.0	1,140	<50.0	<50.0	4,860
	4/22/2010	<5.0	<5.0	45.7	8.1	<5.0	2,180
	7/22/2010	<5.0	<5.0	97.8	<5.0	<5.0	1,320
	10/14/2010	<25.0	<25.0	39.5	<25.0	<25.0	676
	1/20/2011	<5.0	<5.0	590	14.8	<25.0	1,770
	5/4/2011	<5.0	<5.0	288	<5.0	<5.0	2,030
	7/27/2011	<5.0	<5.0	35.9	<5.0	<5.0	274
	10/24/2011	<5.0	<5.0	32.5	<5.0	<5.0	136
	2/13/2012	<5.0	<5.0	<5.0	<5.0	<5.0	52.5
	4/25/2012	<5.0	<5.0	5.0	<5.0	<5.0	85.2
	8/2/2012	<5.0	<5.0	879	13.9	<5.0	561
	11/14/2012	<5.0	<5.0	18.4	<5.0	<5.0	436
	3/4/2013	<5.0	<5.0	111	<5.0	<5.0	934

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**Cumulative Monitoring Well Groundwater Analytical Results**  
**Quarter 1 - 2013**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**  
**MUNDELL Project No.: M01046**

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
MMW-P-09S	2/22/2007	10.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/14/2007	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	9/19/2007	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	12/12/2007	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	3/20/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/5/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	9/11/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	11/19/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	3/17/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/16/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	8/6/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	11/3/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	2/3/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/22/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	7/22/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	10/13/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	1/19/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/30/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	7/26/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	10/18/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	2/15/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/24/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	8/1/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	11/13/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	3/5/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MMW-P-10S	6/14/2007	36.1	36.3	61.6	6.9	<5.0	<2.0
	7/6/2007	87.9	54.9	92.1	10.2	<5.0	<2.0
	9/19/2007	192	82.6	126	14.4	<5.0	<2.0
	12/14/2007	71.0	<5.0	<5.0	<5.0	<5.0	2.4
	3/20/2008	26.8	19.2	250	12.2	<5.0	<2.0
	6/5/2008	15.0	9.7	537	16.0	<5.0	114
	9/11/2008	74.8	36.5	1,650	74.0	<5.0	27.7
	11/19/2008	78.6	28.0	1,510	<5.0	<5.0	22.3
	3/17/2009	11.9	8.6	1,160	71.5	<5.0	<2.0
	6/17/2009	<5.0	<5.0	331	20.5	<5.0	63.9
	8/6/2009	<5.0	<5.0	158	16.1	<5.0	395
	11/3/2009	<5.0	<5.0	29.6	<5.0	<5.0	288
	2/4/2010	<5.0	<5.0	45.4	<5.0	<5.0	419
	4/22/2010	<5.0	<5.0	16.2	<5.0	<5.0	118
	7/21/2010	<5.0	<5.0	<5.0	<5.0	<5.0	16.5
	10/14/2010	<5.0	<5.0	5.4	<5.0	<5.0	381
	1/20/2011	<5.0	<5.0	11.7	<5.0	<5.0	27.8
	5/5/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	7/27/2011	<5.0	<5.0	<5.0	<5.0	<5.0	12.5
	10/21/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	2/13/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/25/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	8/2/2012	<5.0	<5.0	<5.0	<5.0	<5.0	26.8
	11/14/2012	<5.0	<5.0	<5.0	<5.0	<5.0	2.3
	2/28/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MMW-P-12S	9/9/2011	<5.0	<5.0	741	14.1	<5.0	50.8
	10/24/2011	<5.0	<5.0	642	19.2	<5.0	60.7
	2/15/2012	<5.0	<5.0	777	14.5	<5.0	61.4
	5/1/2012	<5.0	<5.0	454	12.4	<5.0	50.9
	8/7/2012	<5.0	<5.0	679	20.3	<5.0	51.8
	11/19/2012	<5.0	<5.0	763	15.8	<5.0	76.1
	3/9/2013	<5.0	<5.0	505	18.0	<5.0	63.0

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**Cumulative Monitoring Well Groundwater Analytical Results**  
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**Michigan Plaza**  
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**Indianapolis, Indiana**  
**MUNDELL Project No.: M01046**

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
<i>Deep Wells</i>							
MMW-P-03D	11/9/2005	22.0	<5.0	42.0	<5.0	<5.0	2.0
	2/22/2007	48.9	<5.0	57.8	<5.0	39.0	15.6
	6/14/2007	21.7	<5.0	74.9	<5.0	<5.0	34.5
	9/19/2007	14.3	<5.0	76.1	7.3	<5.0	36.6
	12/13/2007	11.0	<5.0	40.0	<5.0	<5.0	20.0
	39527	<5.0	<5.0	170	6.0	<5.0	18.0
	39604	<5.0	<5.0	150	7.4	<5.0	26.0
	39702	<5.0	<5.0	95.7	6.4	<5.0	<2.0
	11/19/2008	<5.0	<5.0	80.6	<5.0	<5.0	36.9
	3/17/2009	<5.0	<5.0	65.2	<5.0	<5.0	69.8
	6/17/2009	<5.0	<5.0	14.9	5.9	<5.0	137
	8/6/2009	<5.0	<5.0	16.7	<5.0	<5.0	248
	11/3/2009	<5.0	<5.0	8.5	<5.0	<5.0	168
	2/4/2010	<5.0	<5.0	<5.0	<5.0	<5.0	287
	4/22/2010	<5.0	<5.0	7.2	<5.0	<5.0	211
	7/21/2010	6.6	<5.0	271	8.1	<5.0	305
	10/13/2010	<5.0	<5.0	<5.0	<5.0	<5.0	16.2
	1/19/2011	<5.0	<5.0	<5.0	<5.0	<5.0	46.2
	5/4/2011	<5.0	<5.0	64.3	<5.0	<5.0	118
	7/27/2011	<5.0	<5.0	<5.0	<5.0	<5.0	10.5
	10/18/2011	<5.0	<5.0	<5.0	<5.0	<5.0	61.5
	2/13/2012	<5.0	<5.0	<5.0	<5.0	<5.0	4.0
	4/25/2012	<5.0	<5.0	<5.0	<5.0	<5.0	16.6
	8/1/2012	<5.0	<5.0	<5.0	<5.0	<5.0	175
	11/14/2012	<5.0	<5.0	<5.0	<5.0	<5.0	17.3
	3/4/2013	<5.0	<5.0	<5.0	<5.0	<5.0	51.7
MMW-P-09D	6/14/2007	<5.0	<5.0	<5.0	<5.0	<5.0	46.2
	9/19/2007	<5.0	<5.0	<5.0	<5.0	<5.0	83.1
	12/12/2007	<5.0	<5.0	<5.0	<5.0	<5.0	71.0
	3/20/2008	<5.0	<5.0	<5.0	<5.0	<5.0	3.0
	6/5/2008	<5.0	<5.0	<5.0	<5.0	<5.0	100
	9/11/2008	<5.0	<5.0	<5.0	<5.0	<5.0	72.6
	11/19/2008	<5.0	<5.0	<5.0	<5.0	<5.0	97.2
	3/17/2009	<5.0	<5.0	<5.0	<5.0	<5.0	85.1
	6/16/2009	<5.0	<5.0	<5.0	<5.0	<5.0	73.5
	8/6/2009	<5.0	<5.0	<5.0	<5.0	<5.0	80.8
	11/3/2009	<5.0	<5.0	<5.0	<5.0	<5.0	87.1
	2/3/2010	<5.0	<5.0	<5.0	<5.0	<5.0	111
	4/22/2010	<5.0	<5.0	<5.0	<5.0	<5.0	76.9
	7/22/2010	<5.0	<5.0	<5.0	<5.0	<5.0	81.2
	10/13/2010	<5.0	<5.0	<5.0	<5.0	<5.0	70.6
	1/19/2011	<5.0	<5.0	<5.0	<5.0	<5.0	66.9
	4/30/2011	<5.0	<5.0	<5.0	<5.0	<5.0	74.5
	7/26/2011	<5.0	<5.0	<5.0	<5.0	<5.0	83.3
	10/21/2011	<5.0	<5.0	<5.0	<5.0	<5.0	71.9
	2/15/2012	<5.0	<5.0	<5.0	<5.0	<5.0	70.7
	4/24/2012	<5.0	<5.0	<5.0	<5.0	<5.0	56.6
	8/1/2012	<5.0	<5.0	<5.0	<5.0	<5.0	69.2
	11/13/2012	<5.0	<5.0	<5.0	<5.0	<5.0	61.6
	3/5/2013	<5.0	<5.0	<5.0	<5.0	<5.0	96.4

**Table 3**  
**Cumulative Monitoring Well Groundwater Analytical Results**  
**Quarter 1 - 2013**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**  
**MUNDELL Project No.: M01046**

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
MMW-P-10D	6/14/2007	<5.0	10.6	481	7.7	<5.0	98.7
	7/6/2007	<5.0	<5.0	498	9.0	<5.0	118
	9/19/2007	<5.0	<5.0	350	<5.0	<5.0	76.1
	12/14/2007	<5.0	<5.0	270	<5.0	<5.0	77.0
	3/20/2008	<5.0	<5.0	<5.0	<5.0	<5.0	3.0
	6/5/2008	<5.0	<5.0	508	<5.0	<5.0	267
	9/11/2008	<5.0	<5.0	435	<5.0	<5.0	288
	11/19/2008	<5.0	<5.0	3,390	<5.0	<5.0	5,030
	3/17/2009	<5.0	<5.0	4,860	12.9	<5.0	2,500
	6/17/2009	<5.0	<5.0	3,710	9.6	<5.0	9,070
	8/6/2009	<5.0	<5.0	2,520	5.1	<5.0	3,400
	11/3/2009	<5.0	<5.0	2,740	<5.0	<5.0	3,500
	2/4/2010	<5.0	<5.0	406	<5.0	<5.0	2,130
	4/22/2010	<5.0	<5.0	30.5	<5.0	<5.0	364
	7/22/2010	<5.0	<5.0	120	<5.0	<5.0	865
	10/14/2010	<25.0	<25.0	<25.0	<25.0	<25.0	707
	1/20/2011	<5.0	<5.0	21.4	<5.0	<5.0	1,210
	5/5/2011	<5.0	<5.0	8.1	<5.0	<5.0	272
	7/27/2011	<5.0	<5.0	46.5	<5.0	<5.0	825
	10/21/2011	<5.0	<5.0	<5.0	<5.0	<5.0	444
	2/13/2012	<5.0	<5.0	28.7	<5.0	<5.0	1790
	4/25/2012	<5.0	<5.0	<5.0	<5.0	<5.0	289
	8/2/2012	<5.0	<5.0	<5.0	<5.0	<5.0	475
	11/14/2012	<5.0	<5.0	<5.0	<5.0	<5.0	964
	2/28/2013	<5.0	<5.0	8.9	<5.0	<5.0	181
MMW-P-12D	9/9/2011	<5.0	<5.0	678	15.9	<5.0	63.0
	10/24/2011	<5.0	<5.0	644	14.2	<5.0	71.3
	2/15/2012	<5.0	<5.0	727	15.0	<5.0	65.1
	5/1/2012	<5.0	<5.0	591	15.2	<5.0	69.4
	8/7/2012	<5.0	<5.0	750	18.8	<5.0	67.6
	11/20/2012	<5.0	<5.0	793	17.4	<5.0	91.8
	3/9/2013	<5.0	<5.0	619	20.6	<5.0	71.4
<b>ENVIRON Monitoring Wells (Off-site)</b>							
<i>Shallow Wells</i>							
MW-167S	11/7/2005	<5.0	<5.0	<5.0	<5.0	<5.0	14.0
	2/21/2007	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/5/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/17/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/21/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/29/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	5/2/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	3/8/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MW-168S	11/7/2005	280	16.0	53.0	<5.0	<5.0	3.0
	2/21/2007	30.1	8.8	155	<5.0	<5.0	29.6
	6/14/2007	<5.0	<5.0	40.8	<5.0	<5.0	34.0
	9/19/2007	32.6	8.0	82.4	<5.0	<5.0	3.5
	12/13/2007	52.0	14.0	78.0	<5.0	<5.0	4.1
	3/20/2008	92.0	12.0	46.0	<5.0	<5.0	4.2
	6/5/2008	80.4	10.1	41.1	<5.0	<5.0	3.6
	9/11/2008	68.5	10.8	66.9	<5.0	<5.0	5.5
	8/7/2009	62.6	10.2	118	<5.0	NS	9.9
	4/21/2010	14.0	7.0	21.9	<5.0	<5.0	<2.0
	3/8/2013	76.0	11.7	75.7	<5.0	<5.0	57.1
MW-169S	2/21/2007	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	11/7/2005	<5.0	<5.0	<5.0	<5.0	NA	<2.0
	6/5/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/21/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/29/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0

**Table 3**  
**Cumulative Monitoring Well Groundwater Analytical Results**  
**Quarter 1 - 2013**  
**Michigan Plaza**  
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Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
MW-170S	2/21/2007	<5.0	<5.0	<5.0	<5.0	<5.0	21.2
	6/3/2008	<5.0	<5.0	<5.0	<5.0	<5.0	5.5
	6/17/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/21/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/29/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	2/16/2012	<5.0	<5.0	6.3	<5.0	<5.0	<2.0
	5/2/2012	<5.0	<5.0	6.0	<5.0	<5.0	<2.0
	8/3/2012	<5.0	<5.0	7.9	<5.0	<5.0	<2.0
	11/16/2012	<5.0	<5.0	6.1	<5.0	<5.0	<2.0
	3/8/2013	<5.0	<5.0	7.9	<5.0	<5.0	<2.0
MW-171S	2/21/2007	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/3/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/21/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/29/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	5/2/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
<i>Deep Wells</i>							
MW-165D	7/7/2010	<5.0	<5.0	122	<5.0	<5.0	202
MW-167D	11/7/2005	<5.0	<5.0	750	<5.0	<5.0	110
	2/21/2007	<5.0	<5.0	375	10.0	<5.0	59.3
	6/5/2008	<5.0	<5.0	616	28.0	<5.0	43.8
	6/17/2009	<5.0	<5.0	612	22.1	<5.0	23.8
	4/21/2010	<5.0	<5.0	626	22.1	<5.0	25.6
	4/29/2011	<5.0	<5.0	392	18.9	<5.0	14.9
	2/16/2012	<5.0	<5.0	541	<5.0	<5.0	20.0
	5/2/2012	<5.0	<5.0	377	16.9	<5.0	21.7
	8/3/2012	<5.0	<5.0	422	26.4	<5.0	8.4
	11/16/2012	<5.0	<5.0	480	19.9	<5.0	9.2
MW-168D	3/8/2013	<5.0	<5.0	382	19.1	<5.0	13.5
	11/7/2005	<5.0	<5.0	6.8	<5.0	<5.0	49.0
	2/21/2007	<5.0	<5.0	8.4	<5.0	<5.0	58.1
	6/14/2007	<5.0	<5.0	5.2	<5.0	<5.0	47.5
	9/19/2007	<5.0	<5.0	<5.0	<5.0	<5.0	89.7
	12/12/2007	<5.0	<5.0	<5.0	<5.0	<5.0	74.0
	3/20/2008	<5.0	<5.0	8.0	<5.0	<5.0	39.0
	6/5/2008	<5.0	<5.0	13.4	<5.0	<5.0	65.9
	9/11/2008	<5.0	<5.0	5.5	<5.0	<5.0	<2.0
	3/17/2009	<5.0	<5.0	16.5	<5.0	<5.0	<2.0
	6/18/2009	<5.0	<5.0	<5.0	<5.0	<5.0	14.5
	8/7/2009	<5.0	<5.0	<5.0	<5.0	<5.0	36.2
	11/4/2009	<5.0	<5.0	<5.0	<5.0	<5.0	99.1
	2/4/2010	<5.0	<5.0	6.3	<5.0	<5.0	128
	4/21/2010	<5.0	<5.0	13.2	<5.0	<5.0	134
	7/22/2010	<5.0	<5.0	6.0	<5.0	<5.0	122
	10/13/2010	<5.0	<5.0	<5.0	<5.0	<5.0	134
	4/29/2011	<5.0	<5.0	<5.0	10.0	<5.0	96.4
	7/28/2011	<5.0	<5.0	<5.0	<5.0	<5.0	228
	10/24/2011	<5.0	<5.0	8.9	<5.0	<5.0	137
	2/16/2012	<5.0	<5.0	<5.0	<5.0	<5.0	108
	5/2/2012	<5.0	<5.0	<5.0	<5.0	<5.0	130
MW-169D	8/3/2012	<5.0	<5.0	<5.0	<5.0	<5.0	104
	11/16/2012	<5.0	<5.0	6.9	<5.0	<5.0	81.3
	3/8/2013	<5.0	<5.0	<5.0	<5.0	<5.0	80.5
	2/21/2007	<5.0	<5.0	<5.0	<5.0	<5.0	11.9
	11/7/2005	<5.0	<5.0	<5.0	<5.0	NA	5.1
	6/5/2008	<5.0	<5.0	<5.0	<5.0	<5.0	14.3

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Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
MW-170D	2/21/2007	<5.0	<5.0	<5.0	<5.0	<5.0	105
	6/3/2008	<5.0	<5.0	<5.0	<5.0	<5.0	230
	6/17/2009	<5.0	<5.0	<5.0	<5.0	<5.0	174
	4/21/2010	<5.0	<5.0	<5.0	<5.0	<5.0	161
	7/7/2010	<5.0	<5.0	<5.0	<5.0	<5.0	233
	4/29/2011	<5.0	<5.0	<5.0	<5.0	<5.0	100
	2/16/2012	<5.0	<5.0	<5.0	<5.0	<5.0	88.8
	5/2/2012	<5.0	<5.0	<5.0	<5.0	<5.0	91.0
	8/3/2012	<5.0	<5.0	<5.0	<5.0	<5.0	77.2
	11/16/2012	<5.0	<5.0	<5.0	<5.0	<5.0	62.8
MW-171D	3/8/2013	<5.0	<5.0	<5.0	<5.0	<5.0	76.9
	2/21/2007	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/3/2008	<5.0	<5.0	<5.0	<5.0	<5.0	3.0
	6/16/2009	<5.0	<5.0	<5.0	<5.0	<5.0	2.2
	4/21/2010	<5.0	<5.0	<5.0	<5.0	<5.0	6.3
	7/22/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/29/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
Floral Park Cemetery Wells (Off-site)	5/2/2012	<5.0	<5.0	<5.0	<5.0	<5.0	9.5
<b>Shallow Wells</b>							
MMW-C-01	11/20/2008	15.7	8.3	296	<5.0	<5.0	<2.0
	3/17/2009	<5.0	<5.0	508	7.3	<5.0	<2.0
	6/18/2009	23.2	<5.0	<5.0	<5.0	<5.0	<2.0
	8/6/2009	84.8	<5.0	66.9	<5.0	<5.0	35.2
	11/3/2009	12.6	<5.0	211	8.9	<5.0	2,720
	2/3/2010	<5.0	<5.0	176	10.1	<5.0	1,790
	4/21/2010	15.3	<5.0	165	7.1	<5.0	1,660
	7/22/2010	40.9	<5.0	22.4	<5.0	<5.0	8.1
	10/14/2010	<5.0	<5.0	69.1	<5.0	<5.0	1,100
	1/19/2011	<5.0	<5.0	14.7	<5.0	<5.0	215
	5/5/2011	22.2	<5.0	<5.0	<5.0	<5.0	<2.0
	7/27/2011	36.7	<5.0	17.1	<5.0	<5.0	150
	10/21/2011	18.7	<5.0	20.6	<5.0	<5.0	59
	2/15/2012	23.8	<5.0	6.0	<5.0	<5.0	21
	4/24/2012	11.9	<5.0	10.6	<5.0	<5.0	45.3
MMW-C-02S	8/1/2012	<5.0	<5.0	8.9	<5.0	<5.0	29.2
	11/15/2012	24.6	<5.0	10.9	<5.0	<5.0	26.7
	3/5/2013	17.5	<5.0	<5.0	<5.0	<5.0	10.1
	11/20/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	3/17/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/18/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	8/6/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	11/3/2009	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	2/3/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/21/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	7/22/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	10/13/2010	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	1/19/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/30/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	7/27/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MMW-C-16S	10/18/2011	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	2/15/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/24/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	8/1/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	11/13/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	3/5/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	8/6/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0

**Table 3**  
**Cumulative Monitoring Well Groundwater Analytical Results**  
**Quarter 1 - 2013**  
**Michigan Plaza**  
**3801-3823 West Michigan Street**  
**Indianapolis, Indiana**  
**MUNDELL Project No.: M01046**

Well ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Chloroform	Vinyl chloride
		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
IDEM RISC Industrial Default Cleanup Level - 2006		55	31	1,000	2,000	1,000	4
IDEM RISC Residential Default Cleanup Level - 2006		5	5	70	100	80	2
MMW-P-11S	9/9/2011	76.1	<5.0	5.9	<5.0	<5.0	9.1
	10/24/2011	592	<5.0	<5.0	<5.0	<5.0	2.5
	2/15/2012	658	<5.0	<5.0	<5.0	<5.0	2.3
	5/1/2012	351	<5.0	9.1	<5.0	<5.0	8.5
	8/8/2012	88.1	<5.0	14.7	<5.0	<5.0	11.4
	11/15/2012	538	<5.0	6.5	<5.0	<5.0	18.7
	3/6/2013	703	<5.0	<5.0	<5.0	<5.0	18.8
MMW-P-13S	9/9/2011	<5.0	<5.0	<5.0	<5.0	<5.0	8.3
	10/24/2011	<5.0	<5.0	<5.0	<5.0	<5.0	19.8
	2/16/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	8/7/2012	<5.0	<5.0	<5.0	<5.0	<5.0	8.9
	11/19/2012	<5.0	<5.0	<5.0	<5.0	<5.0	3.6
	3/7/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MMW-P-14S	2/16/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	8/7/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	3/7/2013	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
<i>Deep Wells</i>							
MMW-C-02D	2/15/2012	<5.0	<5.0	<5.0	<5.0	<5.0	30.7
	4/26/2012	<5.0	<5.0	<5.0	<5.0	<5.0	55.1
	8/8/2012	<5.0	<5.0	<5.0	<5.0	<5.0	95.1
	11/19/2012	<5.0	<5.0	<5.0	<5.0	<5.0	125
	3/7/2013	<5.0	<5.0	<5.0	<5.0	<5.0	162
MMW-C-16D	8/6/2012	<5.0	<5.0	<5.0	<5.0	<5.0	224
	11/19/2012	<5.0	<5.0	<5.0	<5.0	<5.0	349
	3/6/2013	<5.0	<5.0	<5.0	<5.0	<5.0	316
MMW-C-17D	8/8/2012	<5.0	<5.0	<5.0	<5.0	<5.0	2.7
	11/20/2012	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	3/7/2013	<5.0	<5.0	<5.0	<5.0	<5.0	2.1
MMW-P-11DR	2/15/2012	<5.0	<5.0	8.4	<5.0	<5.0	95.1
	5/1/2012	<5.0	<5.0	8.5	<5.0	<5.0	102
	8/7/2012	<5.0	<5.0	11.7	<5.0	<5.0	102
	11/15/2012	<5.0	<5.0	10.4	<5.0	<5.0	117
	3/6/2013	<5.0	<5.0	10.6	<5.0	<5.0	201
MMW-P-13D	9/9/2011	<5.0	<5.0	<5.0	<5.0	<5.0	139
	10/24/2011	<5.0	<5.0	<5.0	<5.0	<5.0	116
	2/16/2012	<5.0	<5.0	<5.0	<5.0	<5.0	155
	4/26/2012	<5.0	<5.0	<5.0	<5.0	<5.0	132
	8/7/2012	<5.0	<5.0	<5.0	<5.0	<5.0	167
	11/19/2012	<5.0	<5.0	<5.0	<5.0	<5.0	154
	3/7/2013	<5.0	<5.0	<5.0	<5.0	<5.0	140
MMW-P-14D	2/16/2012	<5.0	<5.0	<5.0	<5.0	<5.0	49.6
	4/26/2012	<5.0	<5.0	<5.0	<5.0	<5.0	49.5
	8/7/2012	<5.0	<5.0	<5.0	<5.0	<5.0	58.1
	11/20/2012	<5.0	<5.0	<5.0	<5.0	<5.0	58.3
	3/7/2013	<5.0	<5.0	<5.0	<5.0	<5.0	32.3

Notes:

All Values Over IDEM RISC Default Industrial Cleanup Level in **RED**.

All Values Over IDEM RISC Default Residential Cleanup Level in **BLUE**.

PCE = Tetrachloroethene; TCE = Trichloroethene; cis-1,2-DCE = cis-1,2-Dichloroethene; trans-1,2-DCE = trans-1,2-Dichloroethene.

Green Shading indicates areas that appear to be undergoing reductive dechlorination due to CAP-18 Injections.

"J" designation indicates concentration was estimated due to high concentration of one parameter requiring dilution on other parameter quantitations.

All analytical results presented in micrograms per liter (ug/L).

## **ATTACHMENT 2**

### **March-April 2013 Hydrologic Testing Results**

# **Michigan Plaza Slug Testing Results**

## **March-April 2013**

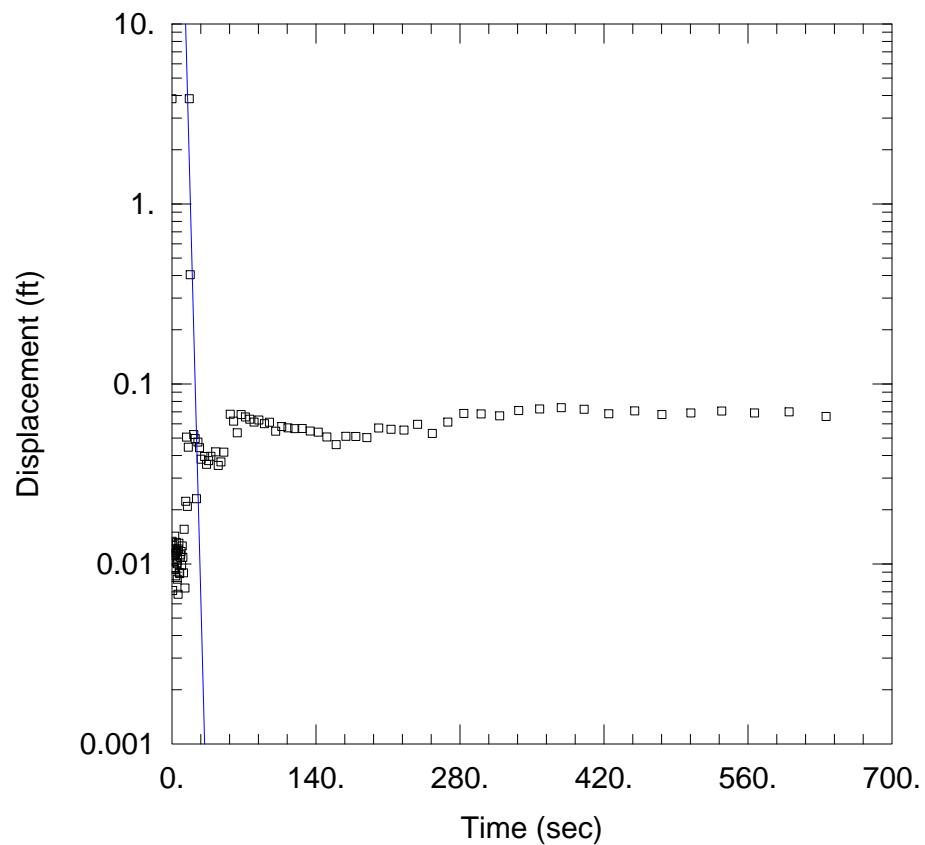
### **Methodology**

On March 29 and April 1, 2013, MUNDELL personnel performed aquifer characterization studies by conducting a series of slug tests at selected wells located between Michigan Plaza and the Cossell Road residences. Monitoring well MMW-P-02 along with shallow/deep well pairs MMW-P-11S/DR, MMW-P-13S/D, and MMW-P-14S/D were evaluated. At each well, the well was opened and allowed to equilibrate for a period of 20 minutes. An In-Situ Inc. Level TROLL® 700 pressure transducer that records elapsed time and water level elevation was then placed into the well and the water level was then allowed to re-equilibrate. The TROLL® was connected to a hand-held In-Situ Inc. RuggedReader® Handheld PC device that controls test initiation and allowed monitoring of water level response data. Slug tests were set up to record response of water level displacement on a logarithmic time scale at intervals of about 3 readings per second at the start of the test, with progressively longer intervals based on a logarithmically decaying schedule as the test progresses. To begin each test, an inert solid PVC slug with dimensions of approximately 3 feet long by 1.25 inches in diameter (for an equivalent displacement volume of about 0.0255 ft<sup>3</sup>) was rapidly lowered into the well to displace the water column. Measurements of the falling water level over time (falling head test) were recorded until approximately 95% recovery was attained. The test was stopped and a new test was begun when water levels returned to the approximate original static position. The test was repeated by removing the slug and recording “rising head” data over time. Between each monitoring well slug test, the Level TROLL® and water level meter were properly decontaminated.

### **Analyses of Field Data**

Hydraulic conductivity values were calculated for each test by processing rising and falling water level data using the AQTESOLV™ software, created by HydroSOLVE, Inc. The Bouwer and Rice Method (1976) curve matching solution for partially penetrating wells was utilized. Based on the tests, K-values range between 22.1 and 141.1 ft/day, with an overall average K-value of 70.1 ft/day.

A summary of the testing results is provided in **Table 1** of the main report, with the slug test results included within this attachment.



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-02 IN (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:32:12

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-02  
 Test Date: 3-29-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 33.49 \text{ ft/day}$   
 $y_0 = 7335.5 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 20.13 ft

Anisotropy Ratio (Kz/Kr): 1.

### WELL DATA (MMW-P-02)

Initial Displacement: 3.84 ft

Total Well Penetration Depth: 10.63 ft

Casing Radius: 0.083 ft

Static Water Column Height: 20.13 ft

Screen Length: 10. ft

Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-02 IN (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:32:28

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 3-29-2013  
Test Well: MMW-P-02

## AQUIFER DATA

Saturated Thickness: 20.13 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-02

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 3.84 ft  
Static Water Column Height: 20.13 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 10. ft  
Total Well Penetration Depth: 10.63 ft

No. of Observations: 105

		Observation Data			
Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.25	0.01337	11.94	0.01559	90.	0.06011
0.5	0.01158	12.66	0.007344	94.8	0.06131
0.75	0.007117	13.44	0.0223	100.8	0.05458
1.	0.01265	14.22	0.05062	106.8	0.05795
1.25	0.01121	15.06	0.02085	112.8	0.05698
1.5	0.01108	15.96	0.04448	119.4	0.05638
1.75	0.01168	16.92	3.84	126.6	0.05651
2.	0.00955	17.88	0.4042	134.4	0.0547
2.25	0.01108	18.96	-0.1717	142.2	0.05396
2.5	0.009312	20.1	-0.07645	150.6	0.05073
2.75	0.01426	21.3	0.05232	159.6	0.04602
3.	0.0122	22.56	0.04968	169.2	0.0512
3.25	0.01136	23.88	0.02303	178.8	0.05108

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.5	0.01197	25.32	0.0475	189.6	0.05035
3.75	0.008592	26.82	0.04421	201.	0.05687
4.	0.01149	28.38	0.03816	213.	0.05602
4.25	0.01318	30.06	-0.02969	225.6	0.05542
4.5	0.01183	31.86	0.0395	238.8	0.05965
4.75	0.01016	33.72	0.03577	253.2	0.05312
5.	0.01002	35.76	0.03745	268.2	0.06143
5.251	0.008222	37.86	0.03962	283.8	0.06856
5.501	0.01076	40.08	-0.008469	300.6	0.06807
5.751	0.01183	42.48	0.04192	318.6	0.0665
6.001	0.006787	45.	0.03528	337.2	0.07116
6.36	0.0121	47.64	0.03685	357.6	0.07261
6.72	0.01304	50.46	0.04179	378.6	0.07382
7.14	0.008945	53.46	-0.01353	400.8	0.07224
7.56	0.008834	56.64	0.06782	424.8	0.0682
7.98	0.01088	60.	0.06217	450.	0.0708
8.46	0.01123	63.6	0.0535	476.4	0.06755
9.	0.01172	67.2	0.06761	504.6	0.069
9.48	0.009799	71.4	0.06553	534.6	0.07069
10.08	0.01258	75.6	0.06372	566.4	0.06894
10.68	0.01088	79.8	0.06143	600.	0.06991
11.28	0.00892	84.6	0.063	636.	0.06594

## SOLUTION

Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 2.262

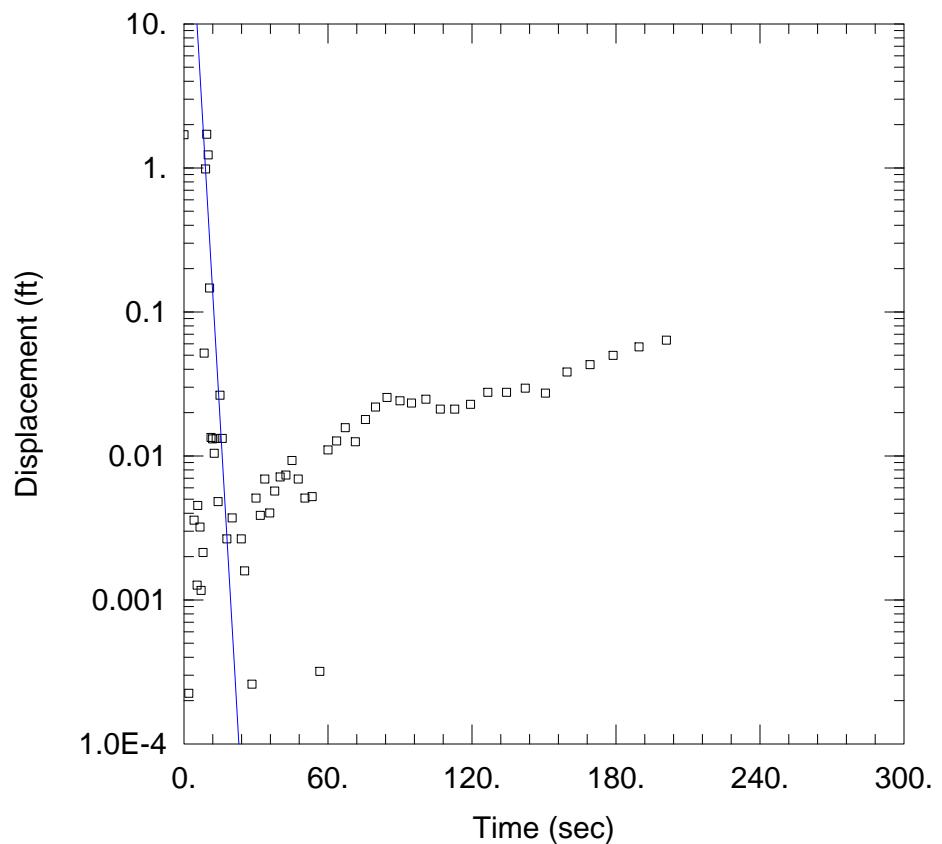
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	33.49	ft/day
y0	7335.5	ft

$$K = 0.01182 \text{ cm/sec}$$

$$T = K^*b = 674.2 \text{ ft}^2/\text{day} (7.25 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-02 OUT (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:31:49

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-02  
 Test Date: 3-29-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 44.42 \text{ ft/day}$   
 $y_0 = 363.2 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 20.13 ft

Anisotropy Ratio ( $K_z/K_r$ ): 1.

### WELL DATA (MMW-P-02)

Initial Displacement: 1.7 ft

Total Well Penetration Depth: 10.63 ft

Casing Radius: 0.083 ft

Static Water Column Height: 20.13 ft

Screen Length: 10. ft

Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-02 OUT (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:31:07

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 3-29-2013  
Test Well: MMW-P-02

## AQUIFER DATA

Saturated Thickness: 20.13 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-02

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 1.7 ft  
Static Water Column Height: 20.13 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 10. ft  
Total Well Penetration Depth: 10.63 ft

No. of Observations: 85

		Observation Data			
Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.25	-0.003103	8.46	0.05177	45.	0.009301
0.5	-0.007002	9.	0.9833	47.64	0.006901
0.75	-0.005798	9.48	1.714	50.46	0.005091
1.	-0.005666	10.08	1.233	53.46	0.005212
1.25	-0.004948	10.68	0.1468	56.64	0.000319
1.5	-0.00375	11.28	0.01345	60.	0.011
1.75	-0.008705	11.94	0.01313	63.6	0.01269
2.	0.000225	12.66	0.01044	67.2	0.01572
2.25	-0.008119	13.44	0.01325	71.4	0.01255
2.5	-0.005338	14.22	0.004814	75.6	0.01789
2.75	-0.002539	15.06	0.02638	79.8	0.02187
3.	-0.006428	15.96	0.01325	84.6	0.02548
3.25	-0.001491	16.92	-0.002299	90.	0.02415

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.5	-0.001856	17.88	0.002651	94.8	0.0233
3.75	-0.00401	18.96	-0.000374	100.8	0.02475
4.	-0.002686	20.1	0.00371	106.8	0.02114
4.25	0.003576	21.3	-0.001323	112.8	0.02114
4.5	-0.000771	22.56	-0.001568	119.4	0.02283
4.75	-0.003307	23.88	0.002651	126.6	0.02764
5.	-0.004133	25.32	0.00159	134.4	0.02764
5.251	-0.001491	26.82	-0.000374	142.2	0.02957
5.501	0.001268	28.38	0.00026	150.6	0.02728
5.751	0.00453	30.06	0.005091	159.6	0.03824
6.001	-0.000282	31.86	0.003865	169.2	0.04307
6.361	-0.000165	33.72	0.006901	178.8	0.04993
6.721	0.003206	35.76	0.004016	189.6	0.05715
7.141	0.001165	37.86	0.005701	201.	0.06365
7.56	-0.002334	40.08	0.007139		
7.98	0.002134	42.48	0.007375		

## SOLUTION

### Slug Test

Aquifer Model: Unconfined  
Solution Method: Bouwer-Rice  
 $\ln(Re/rw)$ : 2.262

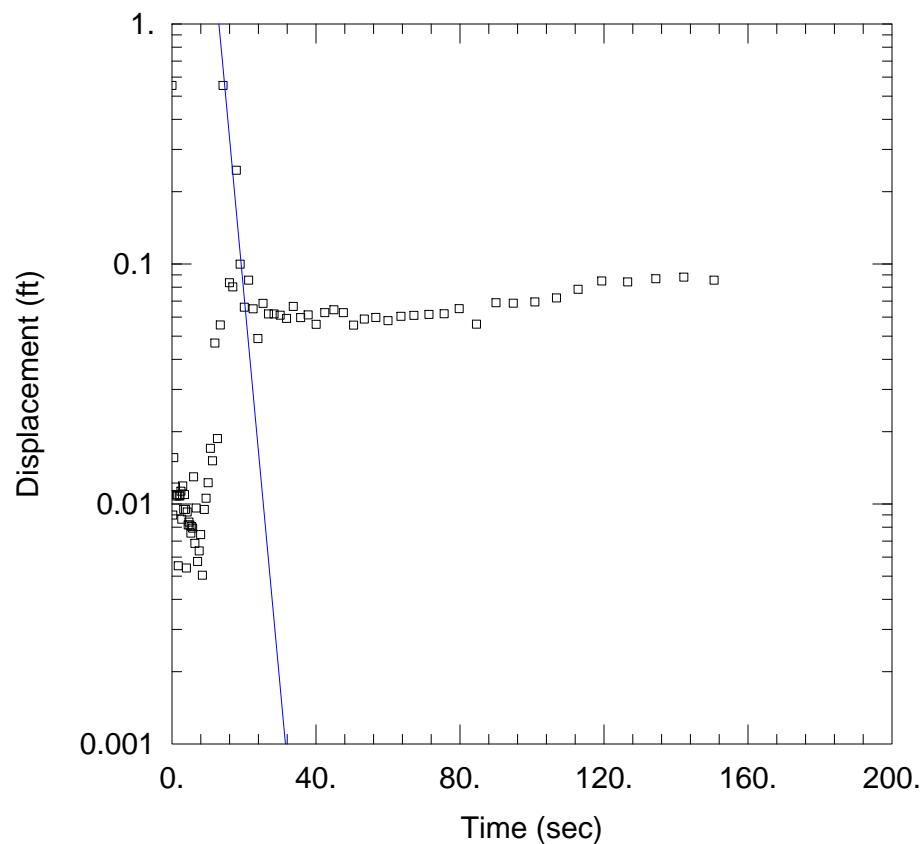
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	44.42	ft/day
y0	363.2	ft

$$K = 0.01567 \text{ cm/sec}$$

$$T = K^*b = 894.2 \text{ ft}^2/\text{day} (9.615 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-11S IN (RUN 3) (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:37:34

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-11S  
 Test Date: 3-29-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 32.9 \text{ ft/day}$   
 $y_0 = 132.4 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 16.17 ft

Anisotropy Ratio (Kz/Kr): 1.

### WELL DATA (MMW-P-11S)

Initial Displacement: 0.5545 ft

Total Well Penetration Depth: 6.17 ft

Casing Radius: 0.083 ft

Static Water Column Height: 16.17 ft

Screen Length: 6.17 ft

Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-11S IN (RUN 3) (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:37:19

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 3-29-2013  
Test Well: MMW-P-11S

## AQUIFER DATA

Saturated Thickness: 16.17 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-11S

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 0.5545 ft  
Static Water Column Height: 16.17 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 6.17 ft  
Total Well Penetration Depth: 6.17 ft

No. of Observations: 80

Time (sec)	Displacement (ft)	Observation Data		Time (sec)	Displacement (ft)
		Time (sec)	Displacement (ft)		
0.251	0.008993	7.561	0.00637	35.76	0.05973
0.501	0.01561	7.981	0.007456	37.86	0.06129
0.751	0.01092	8.461	0.005047	40.08	0.05602
1.001	0.01176	9.001	0.00948	42.48	0.06264
1.251	0.01079	9.481	0.01056	45.	0.06444
1.501	0.01092	10.08	0.01225	47.64	0.06264
1.751	0.005527	10.68	0.01705	50.46	0.05555
2.001	0.01081	11.28	0.01512	53.46	0.0589
2.251	0.01081	11.94	0.0468	56.64	0.05985
2.501	0.01129	12.66	0.01874	60.	0.05805
2.751	0.008638	13.44	0.05568	63.6	0.06046
3.001	0.01188	14.22	0.5545	67.2	0.06105
3.251	0.00948	15.06	-0.2492	71.4	0.06164

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.501	0.01094	15.96	0.08352	75.6	0.062
3.751	0.00948	16.92	0.08017	79.8	0.06512
4.001	0.005408	17.88	0.2455	84.6	0.05613
4.251	0.009253	18.96	0.09971	90.	0.06896
4.501	0.008174	20.1	0.06598	94.8	0.06859
4.751	0.008401	21.3	0.08556	100.8	0.06945
5.001	0.008174	22.56	0.06504	106.8	0.07221
5.251	0.007562	23.88	0.04885	112.8	0.07843
5.501	0.008044	25.32	0.06851	119.4	0.08493
5.751	0.007927	26.82	0.06191	126.6	0.08417
6.001	0.01297	28.38	0.0619	134.4	0.08682
6.361	0.006848	30.06	0.06118	142.2	0.08814
6.721	0.00961	31.86	0.05926	150.6	0.08561
7.141	0.00576	33.72	0.06649		

## SOLUTION

Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 1.823

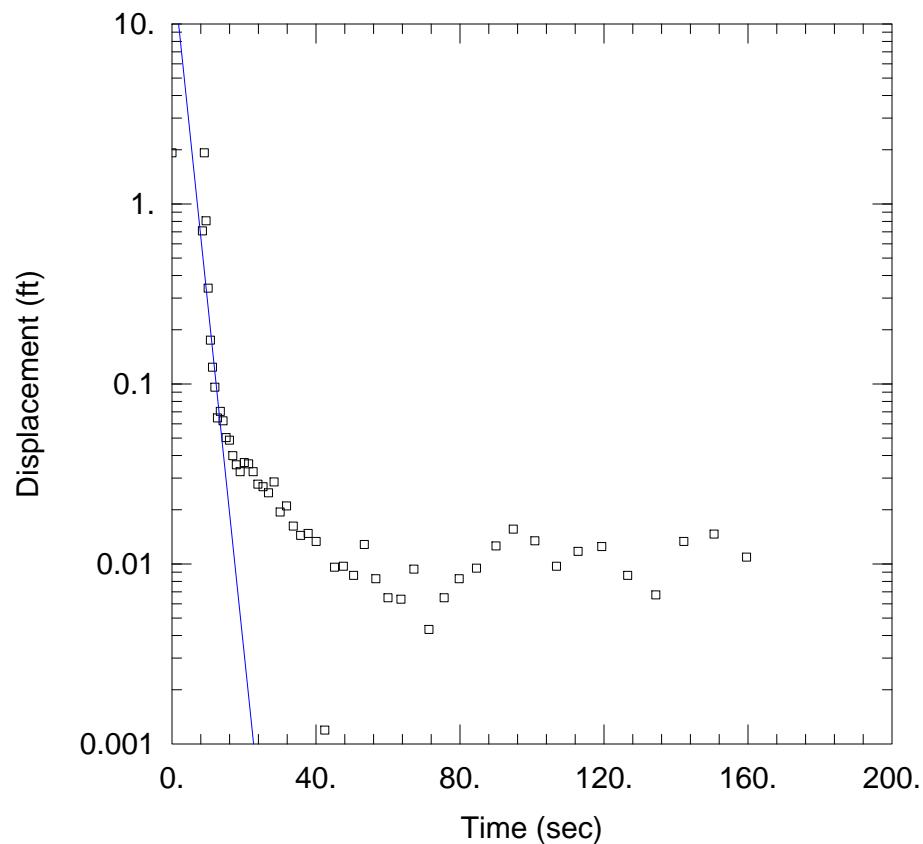
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	32.9	ft/day
y0	132.4	ft

K = 0.01161 cm/sec

T = K\*b = 532. ft<sup>2</sup>/day (5.721 sq. cm/sec)



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-11S OUT (RUN 2) (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:41:23

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-11S  
 Test Date: 3-29-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 38.88 \text{ ft/day}$   
 $y_0 = 22.55 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 16.17 ft

Anisotropy Ratio (Kz/Kr): 1.

### WELL DATA (MMW-P-11S)

Initial Displacement: 1.923 ft

Total Well Penetration Depth: 6.17 ft

Casing Radius: 0.083 ft

Static Water Column Height: 16.17 ft

Screen Length: 6.17 ft

Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-11S OUT (RUN 2) (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:41:39

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 3-29-2013  
Test Well: MMW-P-11S

## AQUIFER DATA

Saturated Thickness: 16.17 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-11S

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 1.923 ft  
Static Water Column Height: 16.17 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 6.17 ft  
Total Well Penetration Depth: 6.17 ft

No. of Observations: 81

Time (sec)	Displacement (ft)	Observation Data		Time (sec)	Displacement (ft)
		Time (sec)	Displacement (ft)		
0.25	-0.01164	7.561	-0.01356	35.76	0.01441
0.5	-0.01307	7.98	-0.01403	37.86	0.01478
0.75	-0.01247	8.461	0.7083	40.08	0.01334
1.	-0.0085	9.	1.923	42.48	0.001193
1.25	-0.01511	9.48	0.8051	45.17	0.009592
1.5	-0.01093	10.08	0.3407	47.64	0.009715
1.75	-0.01285	10.68	0.1751	50.46	0.008645
2.	-0.0126	11.28	0.1237	53.46	0.01283
2.25	-0.01248	11.94	0.09599	56.64	0.008275
2.5	-0.01381	12.66	0.06467	60.	0.00648
2.75	-0.01163	13.44	0.07033	63.6	0.006368
3.	-0.0126	14.22	0.0624	67.2	0.009352
3.25	-0.009962	15.06	0.05027	71.4	0.004325

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.5	-0.01427	15.96	0.04872	75.6	0.00648
3.75	-0.01237	16.92	0.03995	79.8	0.008275
4.	-0.01104	17.88	0.03552	84.6	0.00948
4.25	-0.01151	18.96	0.03252	90.	0.0126
4.5	-0.01525	20.1	0.0366	94.8	0.01559
4.75	-0.01166	21.3	0.03599	100.8	0.01344
5.	-0.01346	22.56	0.03252	106.8	0.009706
5.251	-0.007694	23.88	0.02771	112.8	0.01175
5.501	-0.01321	25.32	0.02687	119.4	0.01248
5.751	-0.01273	26.82	0.02485	126.6	0.008645
6.001	-0.01032	28.38	0.02856	134.4	0.006734
6.361	-0.01094	30.06	0.01944	142.2	0.01334
6.721	-0.01058	31.86	0.021	150.6	0.01464
7.141	-0.01081	33.72	0.01622	159.6	0.01091

## SOLUTION

Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 1.823

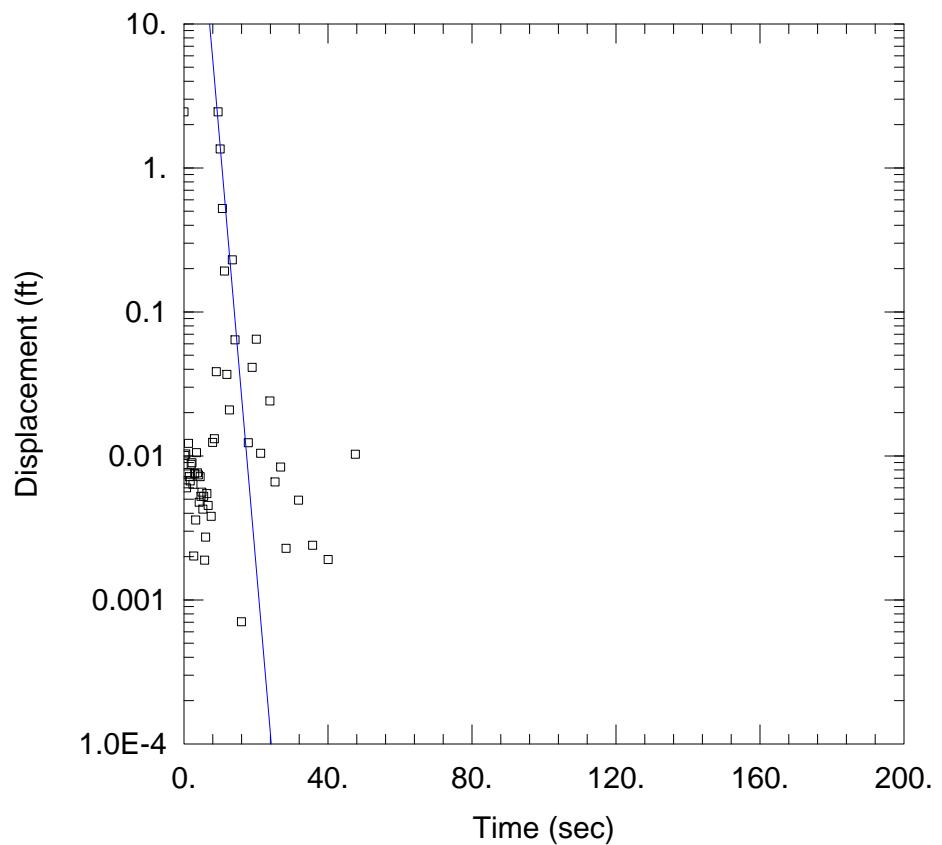
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	38.88	ft/day
y0	22.55	ft

$$K = 0.01371 \text{ cm/sec}$$

$$T = K^*b = 628.6 \text{ ft}^2/\text{day} (6.759 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-11DR IN (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:40:24

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-11DR  
 Test Date: 3-29-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 84.96 \text{ ft/day}$   
 $y_0 = 1219.1 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 16.97 ft

Anisotropy Ratio (Kz/Kr): 1.

### WELL DATA (MMW-P-11DR)

Initial Displacement: 2.452 ft

Total Well Penetration Depth: 13.97 ft

Casing Radius: 0.083 ft

Static Water Column Height: 16.97 ft

Screen Length: 5. ft

Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-11DR IN (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:40:05

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 3-29-2013  
Test Well: MMW-P-11DR

## AQUIFER DATA

Saturated Thickness: 16.97 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-11DR

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 2.452 ft  
Static Water Column Height: 16.97 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 5. ft  
Total Well Penetration Depth: 13.97 ft

No. of Observations: 73

Time (sec)	Displacement (ft)	Observation Data		Time (sec)	Displacement (ft)
		Time (sec)	Displacement (ft)		
0.251	0.01008	6.721	0.004525	28.38	0.002283
0.501	0.01032	7.141	-0.000123	30.06	-0.001674
0.751	0.006003	7.561	0.003803	31.86	0.004924
1.001	0.007665	7.981	0.01243	33.72	-0.000964
1.251	0.01222	8.461	0.01317	35.76	0.002394
1.501	0.007183	9.001	0.03848	37.86	-0.003805
1.751	0.006701	9.481	2.452	40.08	0.001907
2.001	0.008735	10.08	1.355	42.48	-0.002874
2.251	0.008967	10.68	0.5223	45.	-0.004052
2.501	0.006344	11.28	0.1922	47.64	0.01028
2.751	0.002017	11.94	0.0368	50.46	-0.002394
3.001	0.007533	12.66	0.02084	53.46	-0.003204
3.251	0.003585	13.44	0.2302	56.64	-0.007419

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.501	0.01053	14.22	0.064	60.	-0.008845
3.751	0.007643	15.06	-0.03358	63.6	-0.005261
4.001	0.007386	15.96	0.000705	67.2	-0.01399
4.251	0.004772	16.92	-0.006727	71.4	-0.01652
4.501	0.007179	17.88	0.01235	75.6	-0.01482
4.751	0.005241	18.96	0.04125	79.8	-0.01423
5.001	0.005604	20.1	0.06473	84.6	-0.01521
5.251	0.004276	21.3	0.01044	90.	-0.01999
5.501	0.005241	22.56	-0.01221	94.8	-0.02118
5.751	0.001887	23.88	0.0241	100.8	-0.02766
6.001	0.002733	25.32	0.006591		
6.361	0.005479	26.85	0.008368		

## SOLUTION

Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 0.

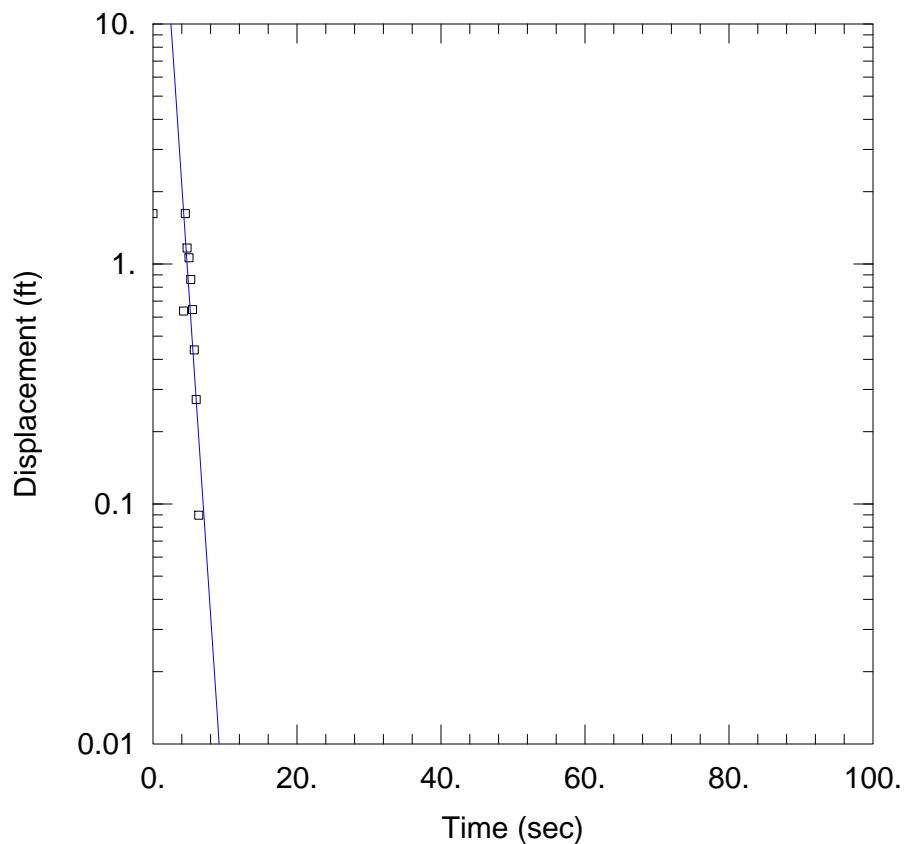
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	84.96	ft/day
y0	1219.1	ft

$$K = 0.02997 \text{ cm/sec}$$

$$T = K^*b = 1441.7 \text{ ft}^2/\text{day} (15.5 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-11DR OUT (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:38:54

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-11DR  
 Test Date: 3-29-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 130.3 \text{ ft/day}$   
 $y_0 = 132.7 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 16.97 ft

Anisotropy Ratio (Kz/Kr): 1.

### WELL DATA (MMW-P-11DR)

Initial Displacement: 1.621 ft

Total Well Penetration Depth: 13.97 ft

Casing Radius: 0.083 ft

Static Water Column Height: 16.97 ft

Screen Length: 5. ft

Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-11DR OUT (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:38:38

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 3-29-2013  
Test Well: MMW-P-11DR

## AQUIFER DATA

Saturated Thickness: 16.97 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-11DR

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 1.621 ft  
Static Water Column Height: 16.97 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 5. ft  
Total Well Penetration Depth: 13.97 ft

No. of Observations: 72

		Observation Data			
Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.25	-0.1126	6.36	0.08968	25.32	-0.1171
0.5	-0.1113	6.72	-0.03156	26.82	-0.1193
0.75	-0.113	7.14	-0.104	28.38	-0.1194
1.228	-0.1177	7.56	-0.1364	30.06	-0.118
1.449	-0.1212	7.98	-0.1402	31.86	-0.119
1.67	-0.1107	8.461	-0.136	33.72	-0.121
2.043	-0.1189	9.	-0.1248	35.76	-0.1206
2.264	-0.1098	9.48	-0.1164	37.86	-0.1205
2.485	-0.1121	10.08	-0.1135	40.08	-0.1156
2.705	-0.113	10.68	-0.1129	42.48	-0.1193
2.926	-0.1124	11.28	-0.1154	45.15	-0.1251
3.146	-0.1081	11.94	-0.1111	47.64	-0.1298
3.366	-0.09571	12.66	-0.1183	50.46	-0.1191

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.586	-0.1118	13.44	-0.116	53.46	-0.1215
3.806	-0.117	14.22	-0.116	56.64	-0.1144
4.026	-0.03699	15.06	-0.1179	60.	-0.1191
4.246	0.6362	15.96	-0.1203	63.6	-0.1167
4.5	1.621	16.92	-0.1158	67.2	-0.1121
4.75	1.165	17.88	-0.1141	71.4	-0.1215
5.	1.061	18.96	-0.1189	75.6	-0.1163
5.25	0.8605	20.1	-0.1164	79.8	-0.1187
5.5	0.645	21.3	-0.1165	84.6	-0.1212
5.75	0.4382	22.56	-0.1168	90.	-0.1245
6.	0.2723	23.88	-0.1178	94.8	-0.1219

## SOLUTION

### Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 0.

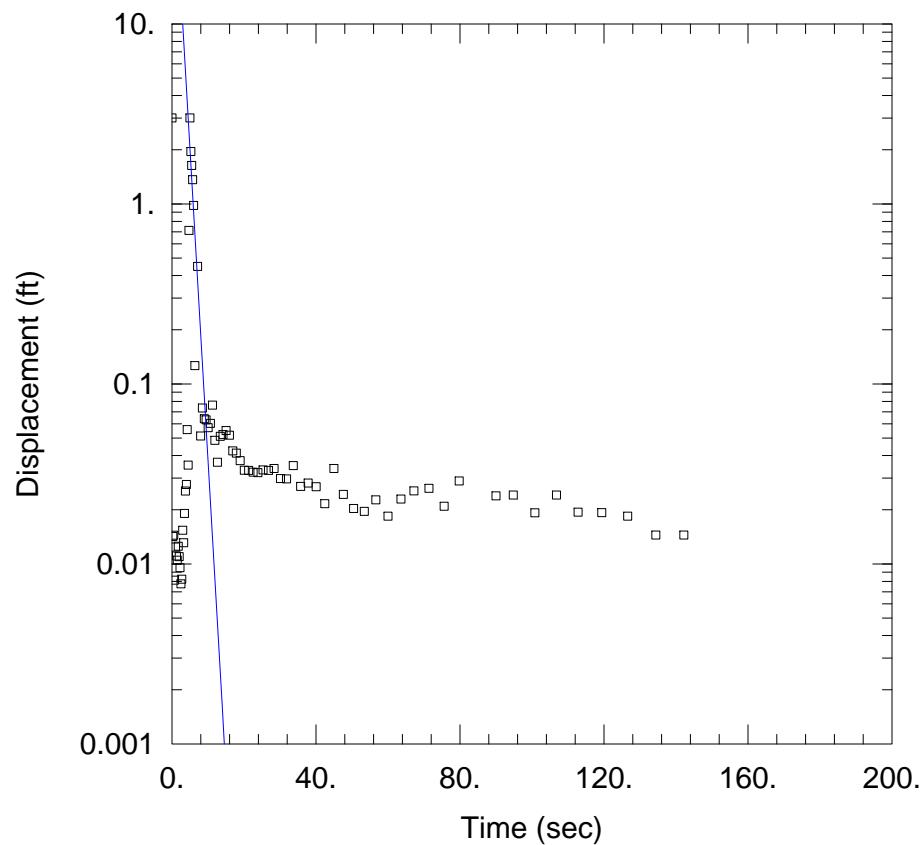
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	130.3	ft/day
y0	132.7	ft

$$K = 0.04598 \text{ cm/sec}$$

$$T = K^*b = 2211.7 \text{ ft}^2/\text{day} (23.78 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-13S IN (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:50:37

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-13S  
 Test Date: 3-29-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 57.4 \text{ ft/day}$   
 $y_0 = 106.6 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 15.86 ft

Anisotropy Ratio ( $K_z/K_r$ ): 1.

### WELL DATA (MMW-P-13S)

Initial Displacement: 3.002 ft

Total Well Penetration Depth: 8.86 ft

Casing Radius: 0.083 ft

Static Water Column Height: 15.86 ft

Screen Length: 8.86 ft

Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-13S IN (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:51:01

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 3-29-2013  
Test Well: MMW-P-13S

## AQUIFER DATA

Saturated Thickness: 15.86 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-13S

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 3.002 ft  
Static Water Column Height: 15.86 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 8.86 ft  
Total Well Penetration Depth: 8.86 ft

No. of Observations: 79

Time (sec)	Displacement (ft)	Observation Data		Time (sec)	Displacement (ft)
		Time (sec)	Displacement (ft)		
0.251	0.01421	7.561	-0.1045	35.76	0.02697
0.501	0.01444	7.981	0.05142	37.86	0.02817
0.751	0.00813	8.461	0.07351	40.08	0.02685
1.001	0.01241	9.001	0.06409	42.48	0.02162
1.251	0.01107	9.481	0.06313	45.	0.0339
1.501	0.0105	10.08	0.05717	47.64	0.02436
1.751	0.01254	10.68	0.06038	50.46	0.02031
2.001	0.01097	11.28	0.07624	53.46	0.01958
2.251	0.00953	11.94	0.04857	56.64	0.02271
2.501	0.007747	12.66	0.03675	60.	0.01841
2.751	0.008224	13.44	0.05119	63.6	0.02294
3.001	0.01539	14.22	0.05237	67.2	0.02544
3.251	0.01312	15.06	0.05512	71.4	0.02629

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.501	0.01907	15.96	0.05188	75.6	0.02092
3.751	0.02542	16.92	0.04249	79.8	0.0289
4.001	0.02765	17.88	0.04128	84.6	-0.0129
4.251	0.05571	18.96	0.03747	90.	0.02389
4.501	0.03542	20.1	0.03317	94.8	0.02414
4.751	0.7127	21.3	0.03306	100.8	0.01923
5.001	3.002	22.56	0.03235	106.8	0.02416
5.251	1.953	23.88	0.03213	112.8	0.01938
5.501	1.635	25.32	0.0333	119.4	0.01926
5.751	1.364	26.82	0.03306	126.6	0.01841
6.001	0.9806	28.38	0.0339	134.4	0.01447
6.361	0.1264	30.15	0.02982	142.2	0.01448
6.721	-0.1229	31.86	0.02971		
7.141	0.4501	33.72	0.03518		

## SOLUTION

Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 2.151

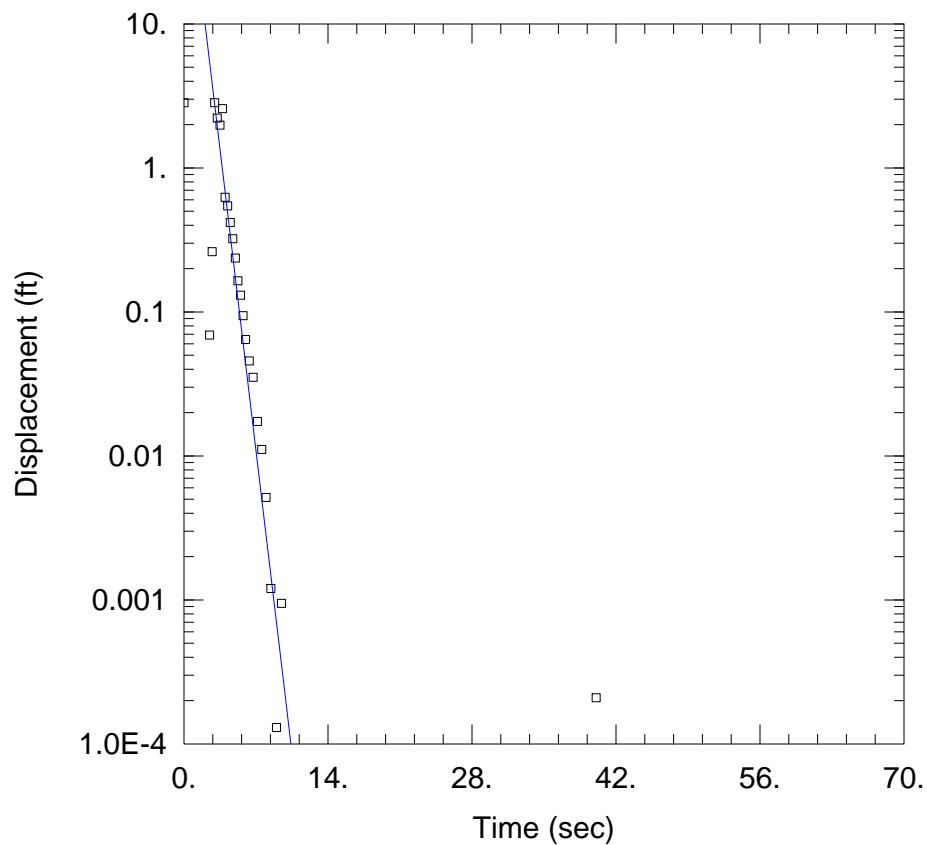
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	57.4	ft/day
y0	106.6	ft

$$K = 0.02025 \text{ cm/sec}$$

$$T = K^*b = 910.3 \text{ ft}^2/\text{day} (9.788 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-13S OUT (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:51:51

### PROJECT INFORMATION

Company: Mundell & Associates Inc  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-13S  
 Test Date: 3-29-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 99.58 \text{ ft/day}$   
 $y_0 = 168.2 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 15.86 ft

Anisotropy Ratio ( $K_z/K_r$ ): 1.

### WELL DATA (MMW-P-13S)

Initial Displacement: 2.835 ft  
 Total Well Penetration Depth: 8.86 ft  
 Casing Radius: 0.083 ft

Static Water Column Height: 15.86 ft  
 Screen Length: 8.86 ft  
 Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-13S OUT (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:52:08

## PROJECT INFORMATION

Company: Mundell & Associates Inc  
Client: AIMCO  
Project: M01046  
Test Date: 3-29-2013  
Test Well: MMW-P-13S

## AQUIFER DATA

Saturated Thickness: 15.86 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-13S

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 2.835 ft  
Static Water Column Height: 15.86 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 8.86 ft  
Total Well Penetration Depth: 8.86 ft

No. of Observations: 66

Time (sec)	Displacement (ft)	Observation Data		Time (sec)	Displacement (ft)
		Time (sec)	Displacement (ft)		
0.251	-0.01421	5.751	0.0942	20.1	-0.006091
0.501	-0.01469	6.001	0.06438	21.3	-0.01398
0.751	-0.01446	6.361	0.04561	22.56	-0.00693
1.001	-0.01313	6.721	0.0352	23.88	-0.01119
1.251	-0.005877	7.141	0.01734	25.32	-0.005276
1.501	-0.01265	7.561	0.0111	26.82	-0.004197
1.751	-0.0123	7.981	0.00515	28.38	-0.01299
2.001	-0.0111	8.461	0.0012	30.06	-0.01071
2.251	-0.01134	9.001	0.00013	31.86	-0.007493
2.501	0.06911	9.481	0.000947	33.72	-0.002418
2.751	0.2622	10.08	-0.001663	35.76	-0.00087
3.001	2.835	10.68	-0.003444	37.86	-0.00397
3.251	2.218	11.28	-0.002493	40.08	0.000209

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.501	1.983	11.94	-0.005137	42.48	-0.005523
3.751	2.578	12.66	-0.007643	45.	-0.004571
4.001	0.6254	13.44	-0.004644	47.64	-0.00565
4.251	0.5441	14.22	-0.001929	50.46	-0.002308
4.501	0.4169	15.06	-0.002512	53.46	-0.007198
4.751	0.3226	15.96	-0.002982	56.64	-0.008738
5.001	0.2363	16.92	-0.003349	60.	-0.005873
5.251	0.1643	17.88	-0.005877	63.65	-0.0123
5.501	0.1308	18.96	-0.004794	67.2	-0.008614

## SOLUTION

Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 2.151

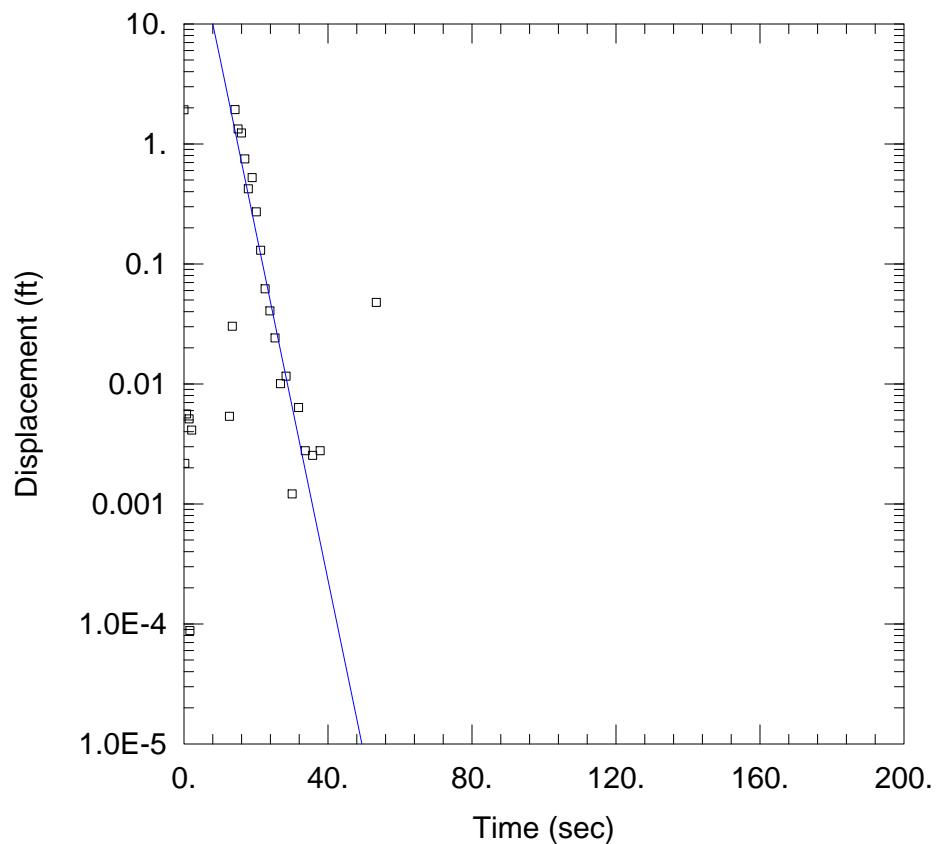
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	99.58	ft/day
y0	168.2	ft

$$K = 0.03513 \text{ cm/sec}$$

$$T = K^*b = 1579.3 \text{ ft}^2/\text{day} (16.98 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-13D IN (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:47:13

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-13D  
 Test Date: 3-29-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 51.97 \text{ ft/day}$   
 $y_0 = 145.9 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 16.1 ft

Anisotropy Ratio (Kz/Kr): 1.

### WELL DATA (MMW-P-13D)

Initial Displacement: 1.929 ft  
 Total Well Penetration Depth: 16.1 ft  
 Casing Radius: 0.083 ft

Static Water Column Height: 16.1 ft  
 Screen Length: 5. ft  
 Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-13D IN (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:47:40

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 3-29-2013  
Test Well: MMW-P-13D

## AQUIFER DATA

Saturated Thickness: 16.1 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-13D

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 1.929 ft  
Static Water Column Height: 16.1 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 5. ft  
Total Well Penetration Depth: 16.1 ft

No. of Observations: 74

Time (sec)	Displacement (ft)	Observation Data		Time (sec)	Displacement (ft)
		Time (sec)	Displacement (ft)		
0.251	0.00218	6.721	-0.007077	28.38	0.01162
0.501	-0.000709	7.141	-0.005754	30.06	0.001213
0.751	0.00562	7.561	-0.007907	31.86	0.006362
1.23	-0.000751	7.981	-0.01244	33.72	0.002779
1.451	0.005111	8.461	-0.01052	35.76	0.002541
1.671	8.8E-5	9.001	-0.01244	37.86	0.002779
2.166	0.004127	9.481	-0.01221	40.08	-0.00569
2.387	-5.3E-5	10.08	-0.009325	42.48	-0.01048
2.607	-0.002904	10.68	-0.004195	45.	-0.0082
2.889	-0.007201	11.28	-0.01029	47.64	-0.002605
3.109	-0.006337	11.94	-0.01016	50.46	-0.009869
3.329	-0.007295	12.66	0.005371	53.46	0.04782
3.549	-0.007529	13.44	0.03024	56.64	-0.005241

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.769	-0.01029	14.22	1.929	60.	-0.01213
3.989	-0.004331	15.06	1.334	63.6	-0.01358
4.209	-0.007201	15.96	1.235	67.2	-0.0113
4.43	-0.008017	16.92	0.7503	71.4	-0.01441
4.65	-0.005173	17.88	0.4228	75.6	-0.01405
4.872	-0.006588	18.96	0.5238	79.8	-0.0206
5.092	-0.005754	20.1	0.2713	84.6	-0.01573
5.312	-0.006236	21.3	0.1302	90.	-0.01504
5.532	-0.009365	22.56	0.06195	94.8	-0.01933
5.753	-0.003862	23.88	0.04065	100.8	-0.0204
6.001	-0.007198	25.32	0.02418	106.8	-0.02194
6.361	-0.007577	26.82	0.01006		

## SOLUTION

Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 2.616

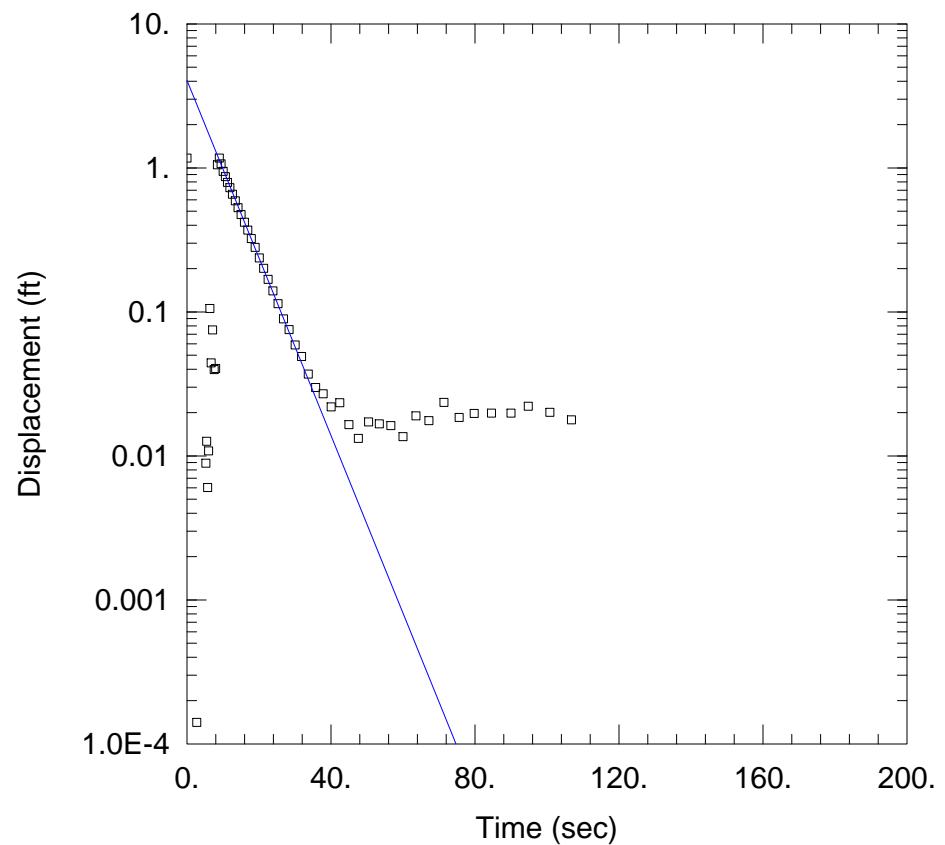
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	51.97	ft/day
y0	145.9	ft

$$K = 0.01833 \text{ cm/sec}$$

$$T = K^*b = 836.8 \text{ ft}^2/\text{day} (8.997 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-13D OUT (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:49:18

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-13D  
 Test Date: 3-29-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 22.11 \text{ ft/day}$   
 $y_0 = 4.053 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 16.1 ft

Anisotropy Ratio ( $K_z/K_r$ ): 1.

### WELL DATA (MMW-P-13D)

Initial Displacement: 1.17 ft  
 Total Well Penetration Depth: 16.1 ft  
 Casing Radius: 0.083 ft

Static Water Column Height: 16.1 ft  
 Screen Length: 5. ft  
 Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-13D OUT (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:49:35

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 3-29-2013  
Test Well: MMW-P-13D

## AQUIFER DATA

Saturated Thickness: 16.1 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-13D

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 1.17 ft  
Static Water Column Height: 16.1 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 5. ft  
Total Well Penetration Depth: 16.1 ft

No. of Observations: 74

Time (sec)	Displacement (ft)	Observation Data		Time (sec)	Displacement (ft)
		Time (sec)	Displacement (ft)		
0.251	-0.005615	6.721	0.04432	28.38	0.07543
0.501	-0.005245	7.141	0.07505	30.06	0.05893
0.751	-0.008139	7.561	0.03976	31.86	0.049
1.001	-0.008821	7.981	0.04047	33.72	0.03705
1.251	-0.00739	8.461	1.052	35.76	0.02987
1.501	-0.007973	9.001	1.17	37.86	0.02701
1.751	-0.008335	9.481	1.068	40.08	0.02188
2.001	-0.003191	10.08	0.947	42.48	0.02339
2.251	-0.00129	10.68	0.869	45.	0.01649
2.501	-0.005485	11.28	0.7928	47.64	0.01322
2.751	0.000141	11.94	0.7288	50.46	0.01721
3.001	-0.005941	12.66	0.6572	53.46	0.01672
3.251	-0.005602	13.44	0.5912	56.64	0.01625

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.501	-0.006078	14.22	0.5295	60.	0.01363
3.751	-0.004393	15.06	0.4745	63.6	0.019
4.001	-0.009136	15.96	0.4201	67.2	0.01757
4.251	-0.00748	16.92	0.3698	71.4	0.02352
4.501	-0.004842	17.88	0.3228	75.6	0.01851
4.751	-0.005212	18.96	0.2806	79.8	0.01972
5.001	-0.001731	20.1	0.2369	84.6	0.01984
5.251	0.008912	21.3	0.2011	90.	0.01984
5.501	0.01263	22.56	0.1684	94.8	0.02211
5.751	0.006036	23.88	0.1399	100.8	0.02009
6.001	0.01083	25.32	0.1142	106.8	0.01782
6.36	0.1058	26.82	0.08953		

## SOLUTION

Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 2.616

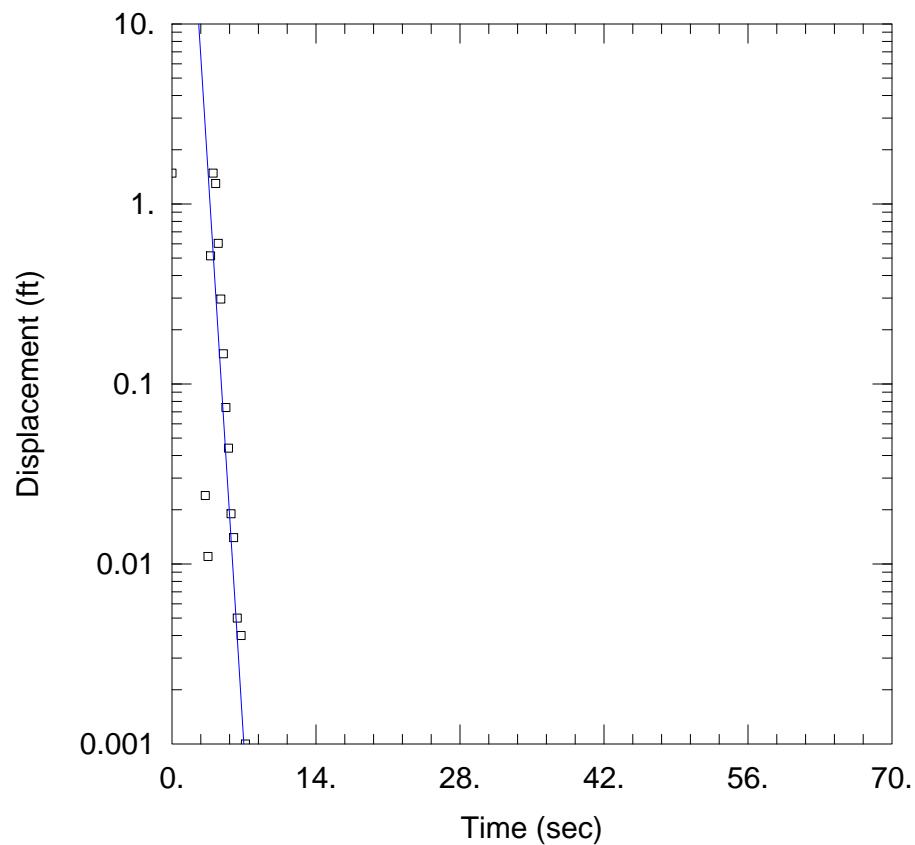
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	22.11	ft/day
y0	4.053	ft

$$K = 0.0078 \text{ cm/sec}$$

$$T = K^*b = 356. \text{ ft}^2/\text{day} (3.828 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-14S OUT (B-R 1976).aqt  
Date: 04/10/13 Time: 16:56:33

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Well: MMW-P-14S  
Test Date: 4-1-2013

### SOLUTION

Aquifer Model: Unconfined  
Solution Method: Bouwer-Rice  
 $K = 141.1 \text{ ft/day}$   
 $y_0 = 2352.1 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 17.89 ft

Anisotropy Ratio (Kz/Kr): 1.

### WELL DATA (MMW-P-14S)

Initial Displacement: 1.482 ft

Total Well Penetration Depth: 9.89 ft

Casing Radius: 0.083 ft

Static Water Column Height: 17.89 ft

Screen Length: 9.89 ft

Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-14S OUT (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:56:53

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 4-1-2013  
Test Well: MMW-P-14S

## AQUIFER DATA

Saturated Thickness: 17.89 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-14S

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 1.482 ft  
Static Water Column Height: 17.89 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 9.89 ft  
Total Well Penetration Depth: 9.89 ft

No. of Observations: 66

		Observation Data			
Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.251	-0.014	5.751	0.019	20.1	-0.015
0.501	-0.009	6.001	0.014	21.3	-0.023
0.751	-0.015	6.361	0.005	22.6	-0.021
1.001	-0.011	6.721	0.004	23.88	-0.025
1.251	-0.016	7.141	0.001	25.32	-0.026
1.501	-0.012	7.561	-0.007	26.82	-0.024
1.751	-0.013	7.981	-0.002	28.38	-0.022
2.001	-0.011	8.461	-0.01	30.06	-0.025
2.251	-0.008	9.001	-0.011	31.86	-0.021
2.501	-0.011	9.481	-0.012	33.72	-0.025
2.751	-0.01	10.08	-0.013	35.76	-0.023
3.001	-0.011	10.68	-0.012	37.86	-0.025
3.251	0.024	11.28	-0.013	40.08	-0.025

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.501	0.011	11.94	-0.015	42.48	-0.024
3.751	0.515	12.66	-0.019	45.	-0.028
4.001	1.482	13.44	-0.018	47.64	-0.021
4.251	1.299	14.22	-0.017	50.46	-0.021
4.501	0.604	15.06	-0.033	53.46	-0.024
4.751	0.296	15.96	-0.034	56.64	-0.023
5.001	0.147	16.92	-0.031	60.	-0.028
5.251	0.074	17.88	-0.005	63.6	-0.024
5.501	0.044	18.96	-0.021	67.2	-0.025

## SOLUTION

Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 2.236

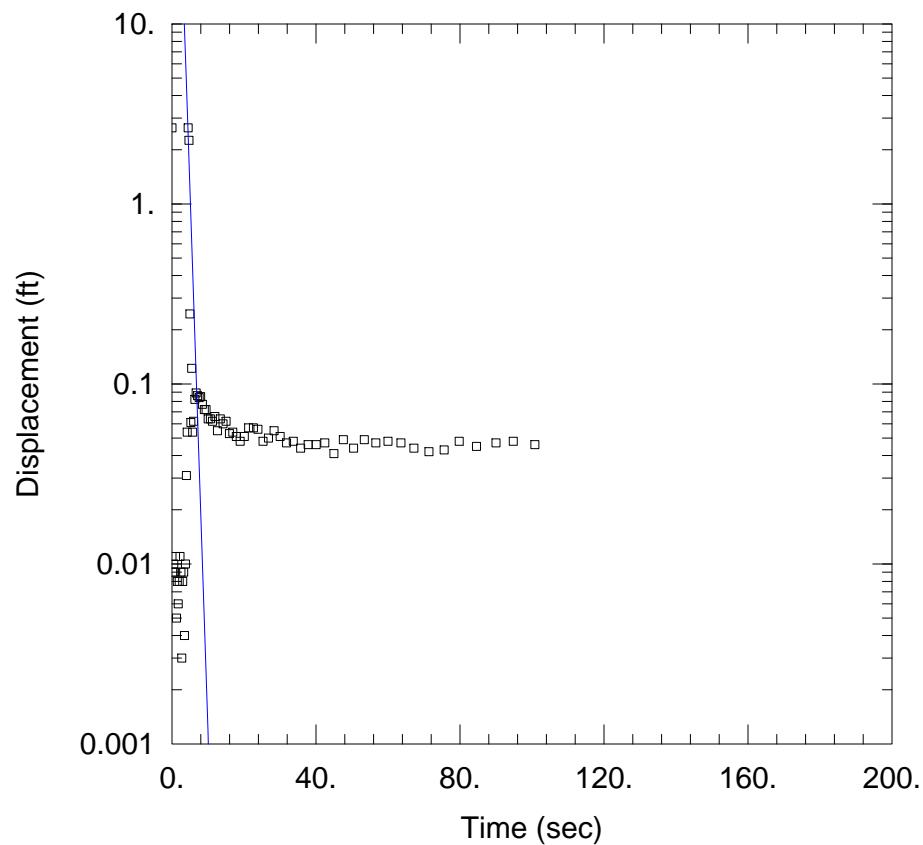
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	141.1	ft/day
y0	2352.1	ft

$$K = 0.04979 \text{ cm/sec}$$

$$T = K^*b = 2524.9 \text{ ft}^2/\text{day} (27.15 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-14S-2 IN (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:57:45

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-14S  
 Test Date: 4-1-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 92.96 \text{ ft/day}$   
 $y_0 = 1186. \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 17.89 ft

Anisotropy Ratio (Kz/Kr): 1.

### WELL DATA (MMW-P-14S)

Initial Displacement: 2.647 ft

Total Well Penetration Depth: 9.89 ft

Casing Radius: 0.083 ft

Static Water Column Height: 17.89 ft

Screen Length: 9.89 ft

Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-14S-2 IN (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:58:09

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 4-1-2013  
Test Well: MMW-P-14S

## AQUIFER DATA

Saturated Thickness: 17.89 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-14S

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 2.647 ft  
Static Water Column Height: 17.89 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 9.89 ft  
Total Well Penetration Depth: 9.89 ft

No. of Observations: 73

Time (sec)	Displacement (ft)	Observation Data		Time (sec)	Displacement (ft)
		Time (sec)	Displacement (ft)		
0.251	0.009	6.721	0.089	28.38	0.055
0.501	0.01	7.141	0.086	30.06	0.051
0.751	0.009	7.561	0.084	31.86	0.047
1.001	0.011	7.981	0.085	33.72	0.048
1.251	0.005	8.461	0.077	35.76	0.044
1.501	0.008	9.	0.072	37.86	0.046
1.751	0.006	9.48	0.072	40.08	0.046
2.001	0.008	10.08	0.064	42.48	0.047
2.251	0.011	10.69	0.064	45.	0.041
2.501	0.009	11.28	0.062	47.64	0.049
2.751	0.003	11.94	0.066	50.46	0.044
3.001	0.008	12.66	0.055	53.46	0.049
3.251	0.009	13.44	0.064	56.64	0.047

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.501	0.004	14.22	0.06	60.	0.048
3.751	0.01	15.06	0.062	63.6	0.047
4.001	0.031	15.96	0.053	67.2	0.044
4.251	0.054	16.92	0.054	71.4	0.042
4.501	2.647	17.88	0.051	75.6	0.043
4.751	2.255	18.96	0.048	79.8	0.048
5.001	0.245	20.1	0.051	84.6	0.045
5.251	0.061	21.3	0.057	90.	0.047
5.501	0.122	22.65	0.057	94.8	0.048
5.751	0.054	23.88	0.056	100.8	0.046
6.001	0.062	25.32	0.048		
6.361	0.082	26.82	0.05		

## SOLUTION

Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 2.236

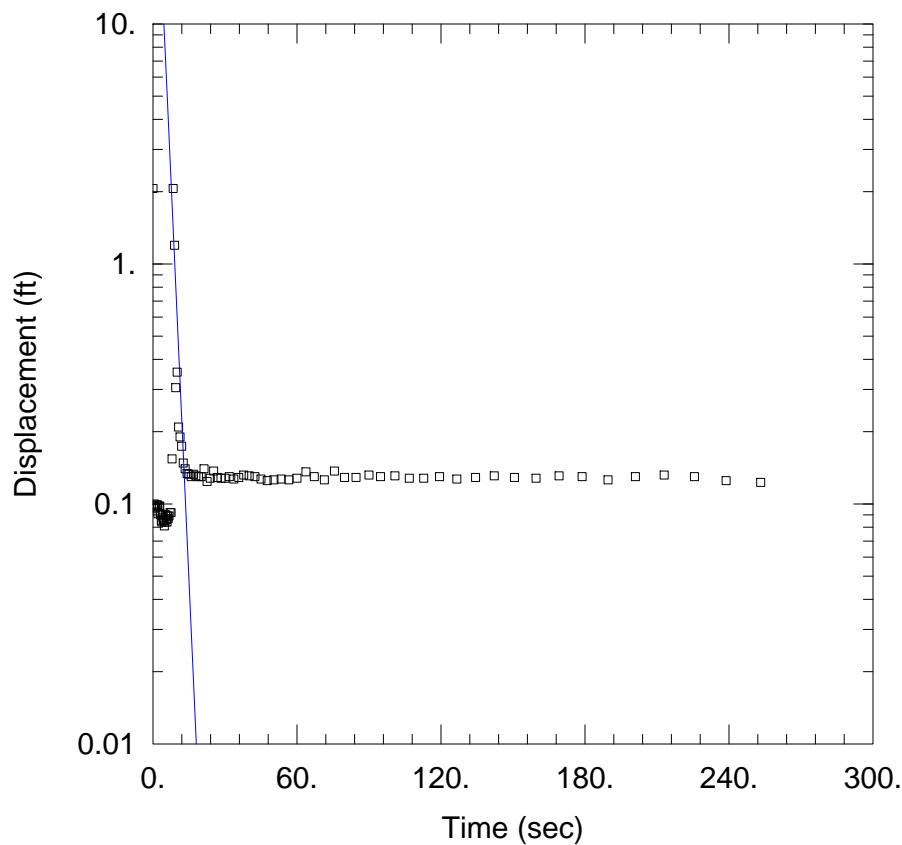
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	92.96	ft/day
y0	1186.	ft

$$K = 0.03279 \text{ cm/sec}$$

$$T = K^*b = 1663.1 \text{ ft}^2/\text{day} (17.88 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-14D IN (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:53:52

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-14D  
 Test Date: 4-1-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 67.13 \text{ ft/day}$   
 $y_0 = 104.9 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 17.61 ft

Anisotropy Ratio (Kz/Kr): 1.

### WELL DATA (MMW-P-14D)

Initial Displacement: 2.061 ft

Total Well Penetration Depth: 15.61 ft

Casing Radius: 0.083 ft

Static Water Column Height: 17.61 ft

Screen Length: 5. ft

Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-14D IN (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:54:11

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 4-1-2013  
Test Well: MMW-P-14D

## AQUIFER DATA

Saturated Thickness: 17.61 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-14D

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 2.061 ft  
Static Water Column Height: 17.61 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 5. ft  
Total Well Penetration Depth: 15.61 ft

No. of Observations: 89

Time (sec)	Displacement (ft)	Observation Data		Time (sec)	Displacement (ft)
		Time (sec)	Displacement (ft)		
0.251	0.098	9.001	1.195	50.46	0.126
0.729	0.1	9.481	0.305	53.46	0.127
0.95	0.097	10.08	0.354	56.64	0.126
1.171	0.096	10.68	0.209	60.	0.128
1.662	0.099	11.28	0.19	63.74	0.136
1.883	0.099	11.94	0.174	67.2	0.13
2.106	0.091	12.66	0.148	71.4	0.126
2.591	0.098	13.44	0.14	75.6	0.137
2.812	0.098	14.22	0.134	79.8	0.129
3.032	0.091	15.06	0.133	84.6	0.129
3.255	0.09	15.96	0.13	90.	0.132
3.475	0.085	16.92	0.133	94.8	0.13
3.696	0.084	17.88	0.131	100.8	0.131

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.917	0.09	18.96	0.13	106.8	0.128
4.137	0.088	20.1	0.13	112.8	0.128
4.358	0.086	21.32	0.14	119.4	0.13
4.578	0.085	22.56	0.124	126.6	0.127
4.798	0.081	23.88	0.128	134.4	0.129
5.02	0.084	25.32	0.137	142.2	0.131
5.24	0.09	26.82	0.129	150.6	0.129
5.46	0.09	28.38	0.128	159.6	0.128
5.681	0.086	30.06	0.128	169.2	0.131
5.902	0.084	31.86	0.13	178.8	0.13
6.122	0.089	33.72	0.127	189.6	0.126
6.36	0.087	35.76	0.129	201.	0.13
6.721	0.089	37.86	0.132	213.	0.132
7.14	0.092	40.08	0.131	225.6	0.13
7.56	0.092	42.48	0.13	238.8	0.125
7.98	0.154	45.	0.127	253.2	0.123
8.461	2.061	47.64	0.125		

## SOLUTION

Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 2.199

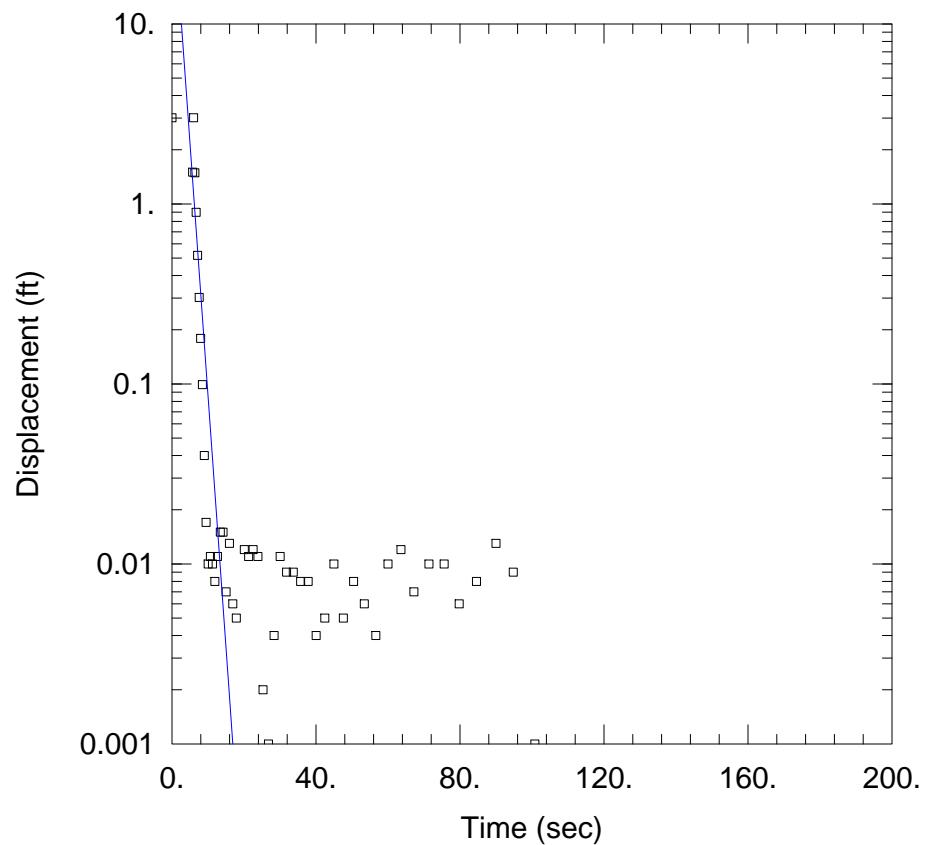
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate
K	67.13 ft/day
y0	104.9 ft

$$K = 0.02368 \text{ cm/sec}$$

$$T = K^*b = 1182.2 \text{ ft}^2/\text{day} (12.71 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\MMW-P-14D OUT (B-R 1976).aqt  
 Date: 04/10/13 Time: 16:55:19

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO  
 Project: M01046  
 Test Well: MMW-P-14D  
 Test Date: 4-1-2013

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Bouwer-Rice  
 $K = 84.4 \text{ ft/day}$   
 $y_0 = 54.51 \text{ ft}$

### AQUIFER DATA

Saturated Thickness: 17.61 ft

Anisotropy Ratio ( $K_z/K_r$ ): 1.

### WELL DATA (MMW-P-14D)

Initial Displacement: 3.008 ft

Total Well Penetration Depth: 15.61 ft

Casing Radius: 0.083 ft

Static Water Column Height: 17.61 ft

Screen Length: 5. ft

Well Radius: 0.33 ft

# AQTESOLV for Windows

Data Set: T:\2001\M01046 Michigan Meadows Apts\Data\Slug Test Files\Bouwer-Rice 1976\MMW-P-14D OUT (B-R 1976).aqt  
Date: 04/10/13  
Time: 16:55:37

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO  
Project: M01046  
Test Date: 4-1-2013  
Test Well: MMW-P-14D

## AQUIFER DATA

Saturated Thickness: 17.61 ft  
Anisotropy Ratio (Kz/Kr): 1.

## SLUG TEST WELL DATA

Test Well: MMW-P-14D

X Location: 0. ft  
Y Location: 0. ft

Initial Displacement: 3.008 ft  
Static Water Column Height: 17.61 ft  
Casing Radius: 0.083 ft  
Well Radius: 0.33 ft  
Well Skin Radius: 0.33 ft  
Screen Length: 5. ft  
Total Well Penetration Depth: 15.61 ft

No. of Observations: 73

Time (sec)	Displacement (ft)	Observation Data		Time (sec)	Displacement (ft)
		Time (sec)	Displacement (ft)		
0.251	-0.01	6.721	0.898	28.38	0.004
0.501	-0.007	7.141	0.518	30.06	0.011
0.751	-0.008	7.561	0.302	31.86	0.009
1.001	-0.011	7.981	0.179	33.72	0.009
1.251	-0.011	8.461	0.099	35.76	0.008
1.501	-0.011	9.001	0.04	37.86	0.008
1.751	-0.01	9.481	0.017	40.08	0.004
2.001	-0.009	10.08	0.01	42.48	0.005
2.251	-0.016	10.68	0.011	45.	0.01
2.501	-0.012	11.28	0.01	47.64	0.005
2.751	-0.01	11.94	0.008	50.46	0.008
3.001	-0.008	12.66	0.011	53.46	0.006
3.251	-0.009	13.44	0.015	56.64	0.004

# AQTESOLV for Windows

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.501	-0.009	14.22	0.015	60.	0.01
3.751	-0.009	15.06	0.007	63.6	0.012
4.001	-0.008	15.96	0.013	67.2	0.007
4.251	-0.009	16.92	0.006	71.4	0.01
4.501	-0.011	17.88	0.005	75.6	0.01
4.751	-0.008	18.96	-0.01	79.8	0.006
5.001	-0.004	20.1	0.012	84.6	0.008
5.251	-0.008	21.3	0.011	90.	0.013
5.501	-0.006	22.56	0.012	94.8	0.009
5.751	1.5	23.88	0.011	100.8	0.001
6.001	3.008	25.32	0.002		
6.361	1.489	26.82	0.001		

## SOLUTION

Slug Test

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

In(Re/rw): 2.199

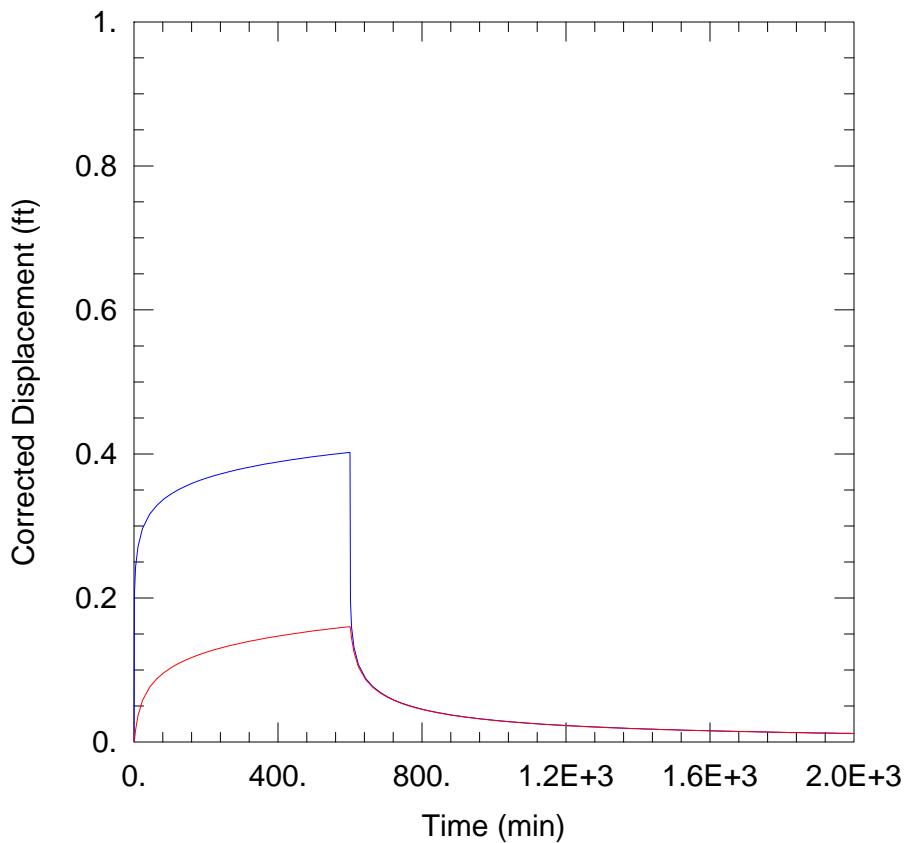
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
K	84.4	ft/day
y0	54.51	ft

$$K = 0.02977 \text{ cm/sec}$$

$$T = K^*b = 1486.2 \text{ ft}^2/\text{day} (15.98 \text{ sq. cm/sec})$$



### WELL TEST ANALYSIS

Data Set: T:\...\OW 10 ft\_S = 0.1\_Rate=3 GPM\_Recovery at 10 hrs  
 Date: 04/10/13 Time: 17:05:36

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Theis  
 $T = 1400. \text{ ft}^2/\text{day}$   
 $S = 0.1$   
 $Kz/Kr = 1.$   
 $b = 20. \text{ ft}$

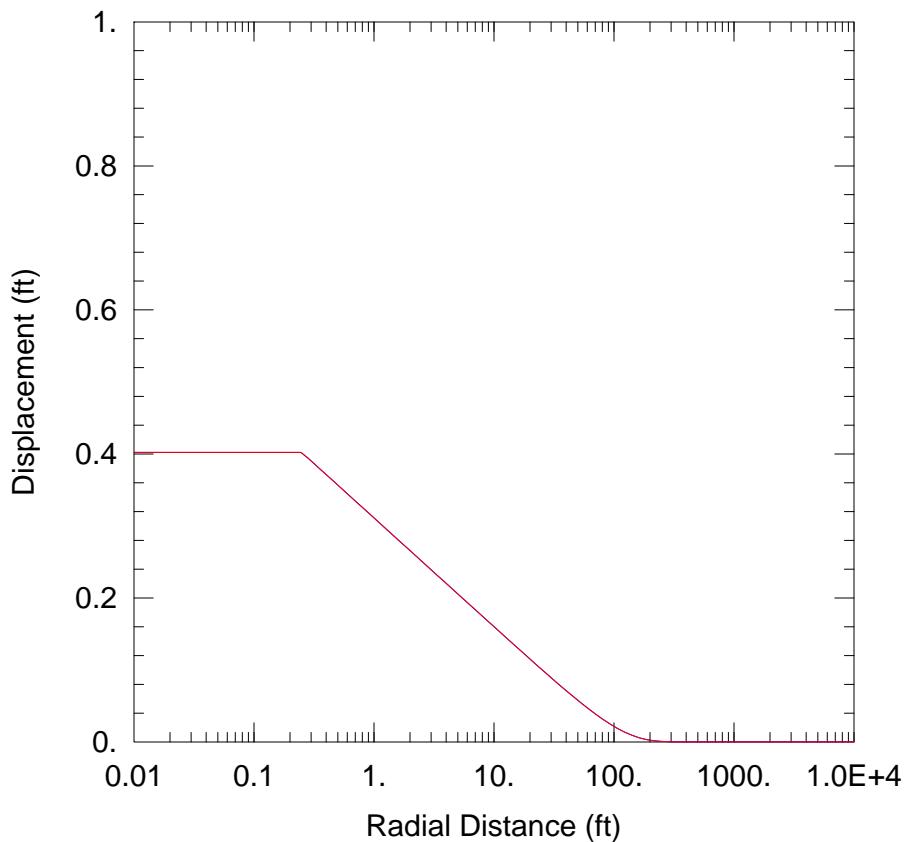
### WELL DATA

#### Pumping Wells

Well Name	X (ft)	Y (ft)
PW	0	0

#### Observation Wells

Well Name	X (ft)	Y (ft)
<input type="checkbox"/> PW	0	0
<input type="checkbox"/> OW	10	0



### WELL TEST ANALYSIS

Data Set: T:\...\OW 10 ft\_S = 0.1\_Rate=3 GPM\_Recovery at 10 hrs  
 Date: 04/10/13 Time: 17:06:04

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Theis  
 $T = 1400. \text{ ft}^2/\text{day}$   
 $S = 0.1$   
 $Kz/Kr = 1.$   
 $b = 20. \text{ ft}$

### WELL DATA

#### Pumping Wells

Well Name	X (ft)	Y (ft)
PW	0	0

#### Observation Wells

Well Name	X (ft)	Y (ft)
<input type="checkbox"/> PW	0	0
<input type="checkbox"/> OW	10	0

# AQTESOLV for Windows

---

Data Set: T:\2001\M01046 Michigan Meadows Apts\VC in Residential Wells\_Allison Issue\Weston Jan 30 2013 Report EPA\MUNDELL Response Files  
Date: 04/10/13  
Time: 17:00:18

---

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO

---

## AQUIFER DATA

Saturated Thickness: 20. ft  
Anisotropy Ratio (Kz/Kr): 1.

---

## PUMPING WELL DATA

No. of pumping wells: 1

### Pumping Well No. 1: PW

X Location: 0. ft  
Y Location: 0. ft

Casing Radius: 0.1 ft  
Well Radius: 0.25 ft

Fully Penetrating Well

No. of pumping periods: 2

Pumping Period Data			
Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	3.	600.	0.

---

## OBSERVATION WELL DATA

No. of observation wells: 2

### Observation Well No. 1: PW

X Location: 0. ft  
Y Location: 0. ft

Radial distance from PW: 0. ft

Fully Penetrating Well

No. of Observations: 0

# AQTESOLV for Windows

---

## Observation Well No. 2: OW

X Location: 10. ft

Y Location: 0. ft

Radial distance from PW: 10. ft

Fully Penetrating Well

No. of Observations: 0

---

## SOLUTION

Pumping Test

Aquifer Model: Unconfined

Solution Method: Theis

---

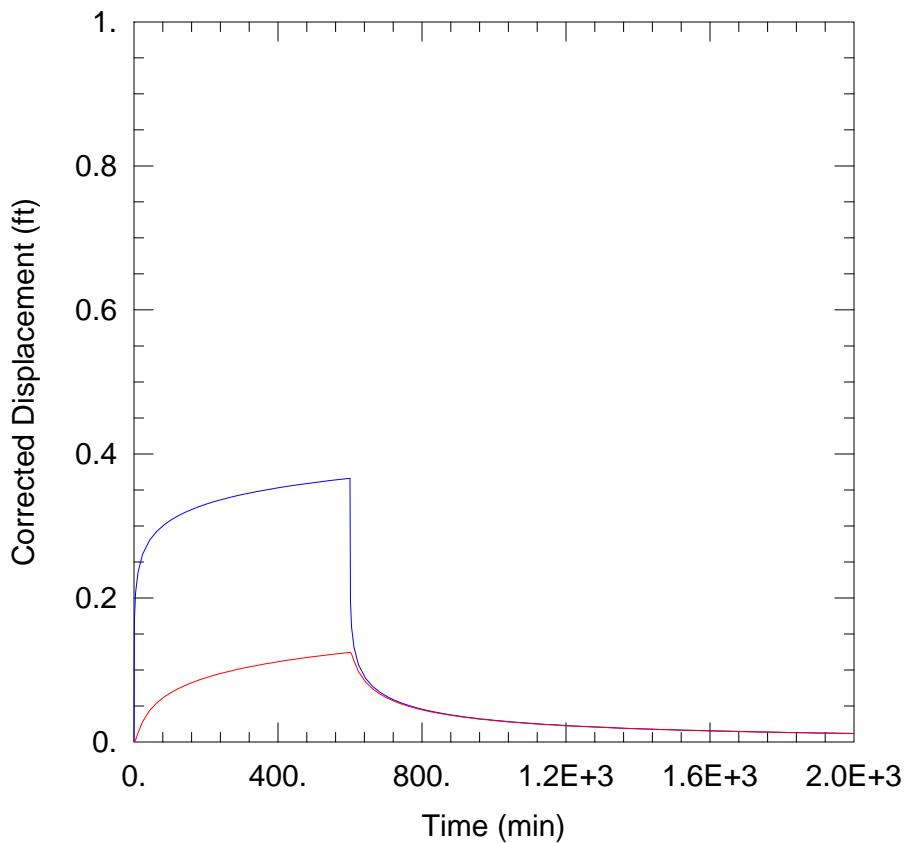
## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
T	1400.	ft <sup>2</sup> /day
S	0.1	
Kz/Kr	1.	
b	20.	ft

$$K = T/b = 70. \text{ ft/day (0.02469 cm/sec)}$$

$$S_s = S/b = 0.005 \text{ 1/ft}$$



### WELL TEST ANALYSIS

Data Set: T:\...\OW 10 ft\_S = 0.3\_Rate=3 GPM\_Recovery at 10 hrs  
 Date: 04/10/13 Time: 17:06:26

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Theis  
 $T = 1400. \text{ ft}^2/\text{day}$   
 $S = 0.3$   
 $Kz/Kr = 1.$   
 $b = 20. \text{ ft}$

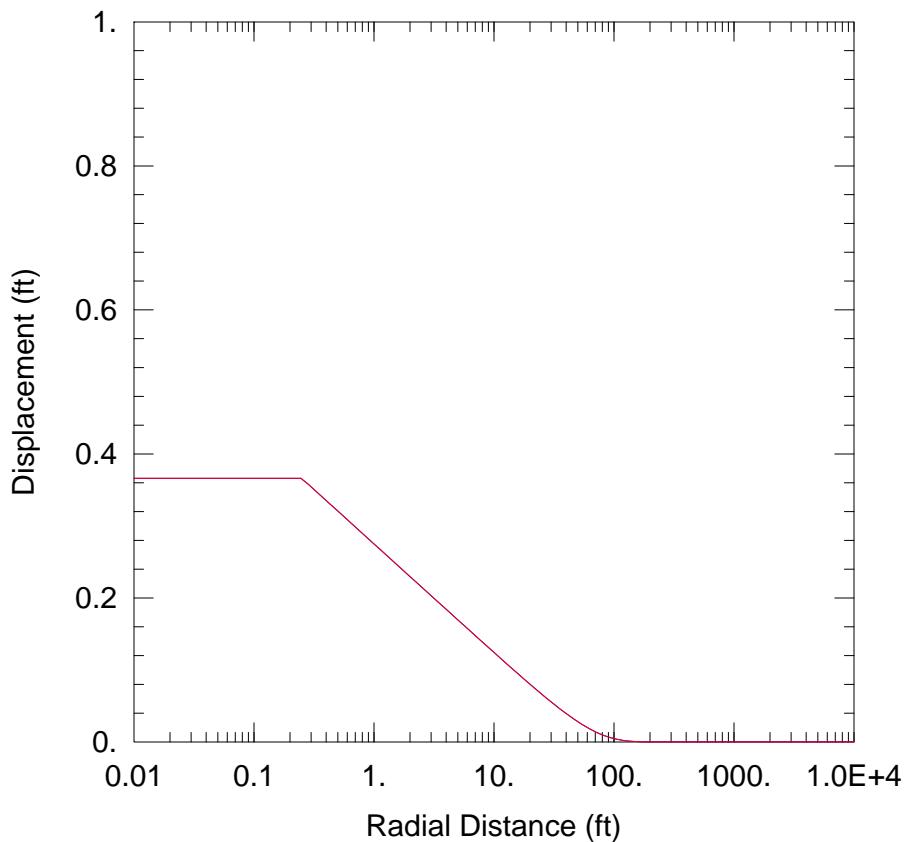
### WELL DATA

#### Pumping Wells

Well Name	X (ft)	Y (ft)
PW	0	0

#### Observation Wells

Well Name	X (ft)	Y (ft)
<input type="checkbox"/> PW	0	0
<input type="checkbox"/> OW	10	0



### WELL TEST ANALYSIS

Data Set: T:\...\OW 10 ft\_S = 0.3\_Rate=3 GPM\_Recovery at 10 hrs  
 Date: 04/10/13 Time: 17:06:43

### PROJECT INFORMATION

Company: Mundell & Associates Inc.  
 Client: AIMCO

### SOLUTION

Aquifer Model: Unconfined  
 Solution Method: Theis  
 $T = 1400. \text{ ft}^2/\text{day}$   
 $S = 0.3$   
 $Kz/Kr = 1.$   
 $b = 20. \text{ ft}$

### WELL DATA

#### Pumping Wells

Well Name	X (ft)	Y (ft)
PW	0	0

#### Observation Wells

Well Name	X (ft)	Y (ft)
<input type="checkbox"/> PW	0	0
<input type="checkbox"/> OW	10	0

# AQTESOLV for Windows

---

Data Set: T:\2001\M01046 Michigan Meadows Apts\VC in Residential Wells\_Allison Issue\Weston Jan 30 2013 Report EPA\MUNDELL Response Files  
Date: 04/10/13  
Time: 16:59:22

---

## PROJECT INFORMATION

Company: Mundell & Associates Inc.  
Client: AIMCO

---

## AQUIFER DATA

Saturated Thickness: 20. ft  
Anisotropy Ratio (Kz/Kr): 1.

---

## PUMPING WELL DATA

No. of pumping wells: 1

### Pumping Well No. 1: PW

X Location: 0. ft  
Y Location: 0. ft

Casing Radius: 0.1 ft  
Well Radius: 0.25 ft

Fully Penetrating Well

No. of pumping periods: 2

Pumping Period Data			
Time (min)	Rate (gal/min)	Time (min)	Rate (gal/min)
0.	3.	600.	0.

---

## OBSERVATION WELL DATA

No. of observation wells: 2

### Observation Well No. 1: PW

X Location: 0. ft  
Y Location: 0. ft

Radial distance from PW: 0. ft

Fully Penetrating Well

No. of Observations: 0

# AQTESOLV for Windows

---

## Observation Well No. 2: OW

X Location: 10. ft

Y Location: 0. ft

Radial distance from PW: 10. ft

Fully Penetrating Well

No. of Observations: 0

---

## SOLUTION

Pumping Test

Aquifer Model: Unconfined

Solution Method: Theis

---

## VISUAL ESTIMATION RESULTS

### Estimated Parameters

Parameter	Estimate	
T	1400.	ft <sup>2</sup> /day
S	0.3	
Kz/Kr	1.	
b	20.	ft

$$K = T/b = 70. \text{ ft/day (0.02469 cm/sec)}$$

$$S_s = S/b = 0.015 \text{ 1/ft}$$